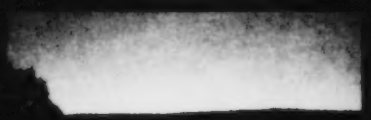
Fort McMurray-Athabasca Oil Sands

Subregional Integrated Resource Plan



Alberta
SUSTAINABLE RESOURCE DEVELOPMENT

Amended June, 2002

FORT McMURRAY-ATHABASCA OIL SANDS

SUBREGIONAL INTEGRATED RESOURCE PLAN

Approved by Cabinet
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Alberta Environment and Alberta Sustainable Resource Development Information Center
Main Floor, 9920 - 108 Street
Edmonton, Alberta
CANADA T5K 2M4

Telephone: (780) 422-2079
Fax: (780) 427-4407
Email: env.infocent@gov.ab.ca

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PREFACE

This planning document was prepared by government agencies and public consultants in recognition of the need for improved management of Alberta's lands and resources. It applies only to public lands in the Fort McMurray-Athabasca Oil Sands planning area, not to private or federal lands.

The plan presents the Government of Alberta's resource management policy for public lands and resources within the area. It is intended to be a guide for resource managers, industry and the public with responsibility or interests in the area, rather than a regulatory mechanism. Resource potentials and opportunities for development are identified with a view to assisting in the economic progress of Alberta. The plan is sufficiently flexible so that all future proposals for land use and development may be considered. No legitimate proposals will be categorically rejected. Energy resource decisions are subject to the application of regulatory approval processes under the jurisdiction of the Minister of Energy. This plan may influence regulatory decisions, but will not result in the categorical approval or rejection of energy proposals.

The provincial government is committed to serving Albertans; should a proposal not be in keeping with the provisions of the plan, staff will work with the proponent to explore alternative means for accommodating the proposal in a more appropriate location, either in this planning area or on other public lands. The rejection of any proposal will be done only in writing by the Minister of Environmental Protection or his designate.

A detailed outline for implementation will be provided for this subregional plan in order to identify the necessary implementation actions and roles. This implementation outline will also provide for the periodic review of the plan so that it may accommodate changing needs and situations. Wherever possible, the private sector will be provided with the opportunity to be actively involved in the operational delivery of the plan.

Implementation is subject to the normal budgetary approval process. In establishing overall priorities, opportunities in other planning areas and areas currently outside the planning process will be considered.

While the plan identifies resource potentials and opportunities, the realization of these may require the dedication of major amounts of public funds. The plan will be used on the understanding that any actions required for implementation will only be undertaken as budgetary approvals are given in the normal way. The private sector will be given the first opportunity to provide any development required.

This plan has no legal status and is subject to revisions or review at the discretion of the Minister of Environmental Protection.

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1.0 INTRODUCTION

1.1 Purpose of the Plan

The Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan provides a comprehensive, integrated approach to the management of public land and resources. It provides government direction and policy information for developing and assessing future actions by provincial government agencies and the private sector.

This plan has the following purposes:

- to resolve issues and conflicts on public land and resources through the integration of objectives and by providing the guidelines to achieve these objectives;
- to provide agencies with a framework within which to develop and implement their own programs;
- to promote a broader perspective of the interdependence of all aspects of resource and land management in the planning area;
- to improve communication between the public and the government; and
- to inform the public, government agencies and industry about the objectives and activities of agencies managing public land and resources in the planning area.

1.2 Planning Process and Participants

The Resource Planning Branch (now Strategic and Regional Support) Alberta Environmental Protection coordinated input from provincial government departments and agencies. These included:

- Alberta Environmental Protection
  - Land and Forest Service
  - Natural Resource Service
  - Environmental Regulatory Service
  - Corporate Management Service
- Alberta Energy
- Alberta Municipal Affairs
- Alberta Economic Development and Tourism
- Alberta Transportation and Utilities
- Alberta Community Development
- Alberta Energy and Utilities Board
- Alberta Agriculture, Food and Rural Development

The City of Fort McMurray Planning Department, the Fort McKay Indian Band, and representatives from private industry also provided input. Special interest groups and the general public have also contributed to the preparation of this document.

The planning process for development of subregional integrated resource plans consists of a series of interrelated steps. The steps are generally sequential; data gathering and analysis steps occur throughout the process. Flexibility exists in the process so it is possible to return to previous steps.

Preparation and approval of a terms of reference document occurs during the plan initiation step of the planning process. The terms of reference present a description of the planning area, the purpose of the plan, a review of existing resource management policy direction, major resource management concerns and issues and a brief explanation of the decision-making process. The planning team completed draft terms of reference in May 1987. On June 25, 1987, an open house was held in Fort McMurray to obtain public input on the draft terms of reference. Issues of concern to the public included:

- agricultural expansion;
- recreation and tourism opportunities;
- transportation linkages to other regions;
- environmental impacts; and
- mandates of local and provincial government agencies.

Preparation of the terms of reference was followed by the initiation of data collection and analysis. The Resource Information Division of Alberta Environmental Protection assisted the planning team by preparing an integrated resource inventory.

The resource management agencies collected and analyzed data in the categories of present use, demand, potential and capability for a variety of resources. This information was used in the development of resource management objectives and guidelines and in the resolution of identified conflicts. During the development of the draft plan, informal discussions were held with some public interests in the planning area.

1.3 Planning Area

Geography

The Fort McMurray-Athabasca Oil Sands planning area (Figure 1) is located approximately 385 km (239 mi.) northeast of Edmonton and 60 km (37 mi.) west of the Alberta-Saskatchewan border. It represents a largely remote landscape of approximately 7163 km^2 (2766 sq. mi.) and contains Fort McMurray, an urban service area in the Regional Municipality of Wood Buffalo. Highways 63 and 881 link this area with other parts of the province. Lands outside of the jurisdiction of this plan include, Fort McMurray, the hamlets of Fort MacKay and Anzac, Native reserves and Metis Settlements and private land. Approximately 98 percent of the planning area is provincial public land.

Shaped by glacial and post-glacial activity, this landscape comprises several undulating plains with some upland areasCthe highest being the Stony Mountain Upland south of Gregoire Lake. Significant natural features in the area include the Athabasca and Clearwater river systems. Slumping commonly occurs along the banks of these rivers. In higher, well drained upland areas, tree cover consists of white spruce, aspen and jack pine. Muskeg and wetlands contain black spruce, willow, birch and sphagnum moss.

Resource Synopsis

The planning area includes one of Alberta's most significant mineral depositsCthe Athabasca Oil Sands. This deposit contains an estimated 720 billion barrels of crude bitumen. When combined with the smaller oil sands deposits that exist in Alberta, the total crude oil reserves are estimated to exceed those of the Middle East.

Forty-five percent of the planning area is underlain by surface mineable oil sands. Forty seven separate leases have been issued, and three of these are currently being developed commercially by the Syncrude and Suncor mining operations. Most of the remaining portions of the planning area (i.e., southern portion) are underlain by oil sands that are too deep to be surface mineable. These reserves are only recoverable by using in-situ extraction techniques.

Sulphur and vanadium have been extracted as byproducts of the oil sands mining operations. Salt and limestone, which have been produced periodically, and other minerals such as natural gas, conventional petroleum, titanium and gypsum have moderate potential. Aggregate, peat and topsoil resources are limited.

Through a forest management agreement (FMA), Alberta-Pacific Forest Industries has been granted the authority to manage and harvest deciduous and coniferous timber. Coniferous timber quotas are committed to Weyerhaeuser Canada Ltd., Northland Forest Products Ltd and Millar Western. Some Miscellaneous Timber Use Areas are available for local residents and the forest industry.

The Athabasca River and several tributary rivers and creeks are vital parts of the regional ecosystem. The Athabasca River is the principal source of water for municipal and industrial uses. Fort McMurray and the Syncrude/Suncor oil sands operations are the largest water consumers. The area's scenic rivers support a variety of fish and wildlife resources, they also offer recreational camping and fishing opportunities for local residents and visitors. Gregoire Lake, which adjoins a Natural Area and provincial park, offers significant recreational opportunities.

The river systems and Gregoire Lake provide limited fishing opportunities. These water bodies support a variety of species including walleye, lake whitefish, northern pike, burbot, suckers, yellow perch, goldeye and mountain whitefish. Wildlife species are generally limited in diversity and abundance. The northern boreal mixedwood ecosystem is characterized by low habitat capabilities and low reproductive rates. The river

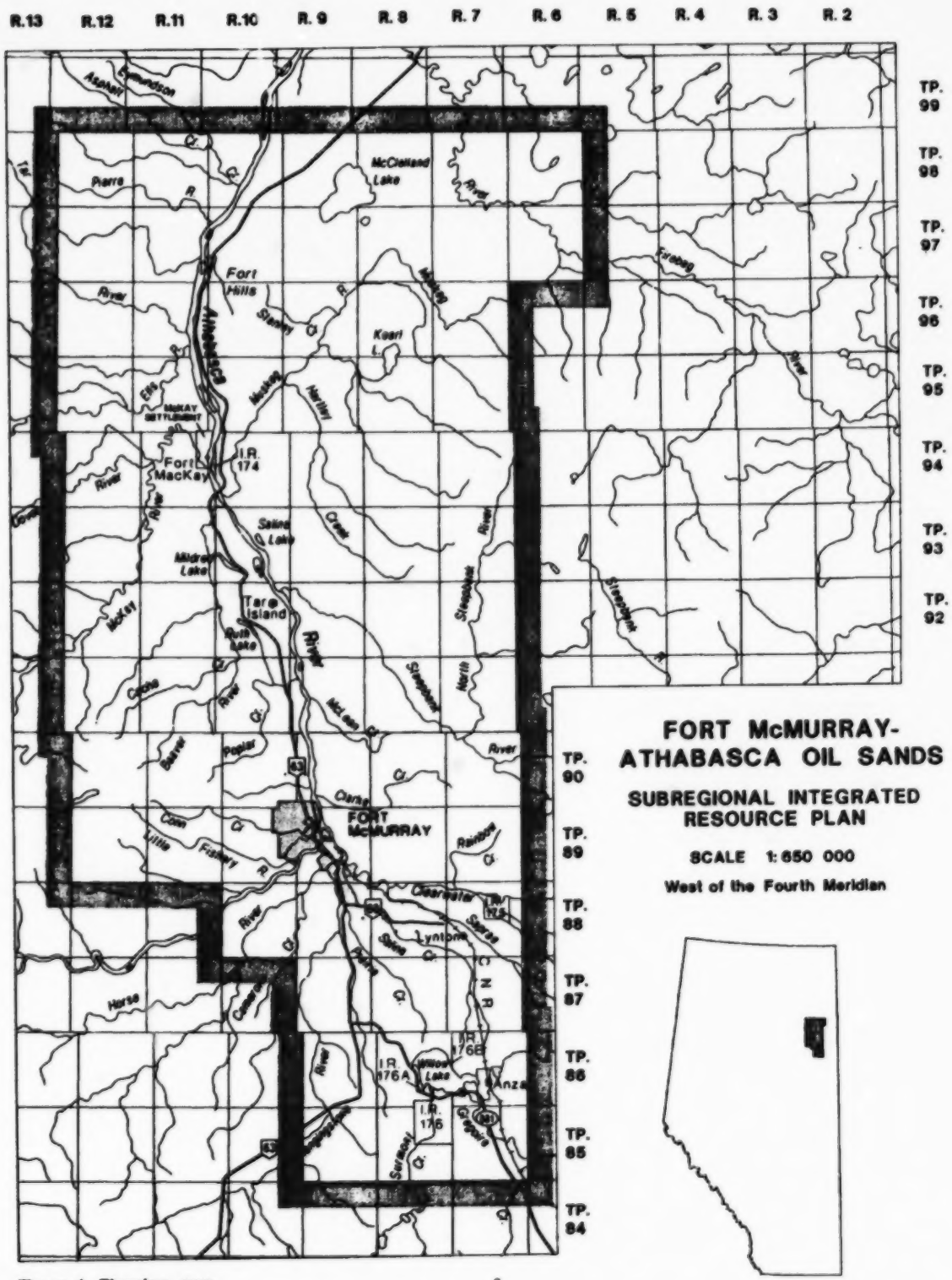

Figure 1. Planning area.

valleys, however, provide important winter range for deer, moose, black bear, wolverine, other furbearers and bird game. The fish and wildlife resources benefit trappers, aboriginal peoples and other local residents seeking opportunities for hunting, fishing, photography and viewing. These activities also provide economic benefits to guides, outfitters, charter companies and tourist operators who use Fort McMurray as a staging area for backcountry adventure touring.

Significant ecological resources have been identified in the planning area. Formally designated ecological resources include Gregoire Lake and La Saline (Saline Springs) Natural Areas. The McClelland Lake wetland is a large wetland containing a rich patterned fen and a number of rare plant species.

From an historical perspective, the Athabasca and Clearwater rivers have played an important role in the economic development of this area. The Beaver Quarry archaeological site, located in the Athabasca River valley, exists as the best example of a prehistoric quarry/workshop in northeastern Alberta. Downstream, the Bitumount Historic Site is the best example of a pioneering project in the development and improvement of hot water oil sands extraction. This process is still applied today. The Clearwater River, recently identified as a candidate for the Canadian Heritage Rivers Program, owes its historical significance to the fur trade.

Economy

Hunting, fishing, trapping, and logging have been traditional economic activities in the planning area. Although oil sands extraction occurred as early as 1906, it did not begin to dominate the socio-economic character of the planning area until 25 years ago. Today, the mining industry directly employs at least 30 percent of the Fort McMurray labour force.

This industry has also resulted in the development of numerous community services and extensive infrastructure. Fort McMurray, an urban service area in the Regional Municipality of Wood Buffalo offers a wide range of financial, educational, transportation, retail and administrative services.

Future economic growth in the region will be closely tied to the development of the Athabasca oil sands. Fort McMurray acts as a staging area for tourists to experience the rugged backcountry of northeastern Alberta. Expansion of recreation and tourism-oriented services presents an opportunity for diversification.

The forest industry provides additional employment opportunities. New markets for timber have recently contributed to a more diverse local economy.

Population and Settlement Pattern

The population of the planning area has increased significantly over the past 30 years (Table 1). The urban service area of Fort McMurray comprises 98 percent of the planning area's population. Fort McMurray's population is young, averaging 26 years in age.

The remaining population resides in two long-established, aboriginal communities. The community of Fort MacKay is located approximately 55 km (34 mi.) north of Fort McMurray along the Athabasca River. Anzac and the Gregoire Lake Reserve are situated near Gregoire Lake, approximately 40 km (25 mi.) southeast of Fort McMurray.

1.4 Implications of Future Development

Given current projections for development, increased pressure on public land and resources of the planning area will result. The planning team therefore assessed the implications of additional large-scale resource development (e.g., major oil sands expansion).

The assessment considered resource development, the effect on population growth and implications of development and growth. Assumptions included the type of development pressures and location. The projections and

Table 1. Population growth in the planning area, 1961-1991.

	1961	1971	1976	1981	1986	1991
Fort McMurray	1188	6847	15424	31000	34949	34706
Fort MacKay	187	207	169	267	250	n/a
Anzac	143	114	138	165	231	n/a
Gregoire Lake Reserve	n/a	n/a	44	58	99	122
Total	**1529**	**7168**	**15775**	**31490**	**35513**	**34706**

Source: Alberta Bureau of Statistics/Statistics Canada (Census of Canada).

Note: Figures, before 1991, do not include temporary, construction camp labour. Population change for the Gregoire Lake Reserve in 1986 results, in part, from a boundary change.

trends were based on similar development activity, and the current economic climate was also taken into account.

Based on this assessment, the plan recommends policies to address potential issues resulting from another major resource development. Should development proceed as projected, these policies will assist in the management of public land and resources in the planning area.

Resource Development

Significant population growth in the planning area depends on increased oil sands development. This increase could involve expansion of the two existing facilities, construction of additional plants, or development of remote mines producing bitumen to feed a regional upgrader or to remote markets. The Suncor Canada Inc. plant, which became operational in 1967, was followed, in 1978, by the Syncrude Canada Ltd. plant. Both plants are proceeding with plans to expand their operations. The Other Six Leases Operation (OSLO)* consortium prepared pre-application studies for a commercial oil sands mining project near Kearl Lake. The project is currently on hold.

Population Growth and Pattern of Development

Fort McMurray has the service capacity for 65 000 persons (Dabbs and Nichols 1987). This capacity would serve the additional population anticipated from future oil sands, forestry and other major developments (Appendix 1). Under the present economic climate, it is assumed that the urban service area of Fort McMurray will continue to be the focus of community and infrastructure development in the area. Along with regional economic expansion, smaller settlements (Anzac, Fort MacKay, and along Gregoire Lake and Fort McMurray Indian Reserves) may continue to experience some fluctuating growth (Dabbs and Nichols 1987).

Implications of Development and Growth

Exploration, extraction and production of resources will continue to be the major factors in economic growth and development, within and outside the planning area. Regional development and its associated economic benefits will have spin-off effects in Fort McMurray, the adjacent fringe area, and on other resources situated in increasingly accessible parts of the planning area.

Note: *OSLO is a consortium composed of Esso Resources Canada, Canadian Occidental Petroleum, Gulf Canada, Pan Canadian Petroleum, Petro-Canada and Alberta Oilsands Equity.

In addition, the oil sands development will contribute significantly to the provincial and national economies.

Fort McMurray Fringe

Coinciding with oil sands development and the growth of Fort McMurray, demand for a mix of land uses in the unsettled portions of the planning area will intensify. Commercial, industrial, residential, institutional, agricultural and recreational activities will increase at locations near Fort McMurray. These activities are important because they provide additional employment opportunities and services for the local population and surrounding region. Land use planning in the fringe should consider the implications of scattered development (e.g., expensive servicing costs).

The fringe area will provide a land base for commercial/industrial land uses requiring highway frontage and/or large land areas not always available at a reasonable cost within the city limits. The Highway 63 corridor, between Fort McMurray and the Syncrude/Suncor oil sands operations, may also become a focus for commercial and industrial activities catering to resource development. Within the city limits, highway-oriented development will be addressed by the Highway 63 Area Structure Plan.

The demand for additional country residential development from residents who prefer an alternative to urban-living may increase. Communities similar to the Saprae Creek Country Residential Subdivision may become more common in the development pattern of the planning area.

Renewable Resource Development

The planning area supports renewable resources (e.g., forests, water, fish, wildlife, historical, ecological) and land uses (recreation, agriculture). However, the land's ability to sustain these resources will be influenced by large-scale, resource extraction activities in the planning area. The cumulative effects of incremental decisions can result in the overall regional degradation of renewable resources.

Largely because of resource extraction activities, increased and improved industrial access will result in increased recreation access. As existing recreational facilities become congested, recreationists will seek new locations for backcountry hiking, fishing, hunting, camping and day-use activities. The significantly young population residing in this planning area could demand more recreation opportunities. Such demand presently focuses on Gregoire Lake and the few accessible, scenic river and stream locations in the planning area. The Gregoire Lake Area Structure Plan (Alberta Municipal Affairs 1993) addresses concerns raised about development around Gregoire Lake.

There is increasing recognition that economic development depends on the capability, potential and limitations of the natural environment. This consideration is gaining acceptance in regional economic development plans. Public concern for environmental issues is increasing where resource development is occurring, or is under consideration. Opportunities for public input on specific developments are available through various mechanisms (e.g., forest management planning, environmental impact assessments, Natural Resources Conservation Board and Energy and Utilities Board processes).

2.0 POLICY CONTEXT

2.1 Legislation and Policy Framework

Various provincial government agencies administer legislation and associated regulations to manage provincial public land and resources. Government directives, such as Orders in Council and ministerial orders, also affect resource management activities. This section highlights those most relevant to the planning area.

The Public Lands Act authorizes the Minister of Environmental Protection to administer public land in Alberta. The allocation of public land occurs through various mechanisms (e.g., licences, permits, leases). Provincial public land is administered either as Green Area or White Area. All public land in the Fort McMurray planning area is within the Green Area. The

Green Area was established by Order in Council in 1948, to be managed primarily for forest production, watershed protection, recreation and other uses. The Forest Act provides for the management of the timber resource on provincial public land. This management includes timber or grazing dispositions. The Green Area does not contain land available for settlement or agricultural development other than grazing.

General direction regarding outdoor recreation, wildlife resources, fisheries resources and regulatory aspects of fish and wildlife management is provided by the Fish and Wildlife Policy for Alberta (1982). This policy calls for the preparation of comprehensive 10-year fish and wildlife resource management plans. Water resources in the planning area are administered by Alberta Environmental Protection. Mineral leases and approval to construct oil sands projects are issued by Alberta Energy and the Alberta Energy and Utilities Board, respectively.

Local authorities, such as the Regional Municipality of Wood Buffalo are responsible for issuing development permits on public and private lands under the authority of the Municipal Government Act. Private users of public land must satisfy the regulatory requirements of both the province and the local authority. Therefore, coordination between the public and private planning systems is essential. Indian Reserves and Metis Settlements, administered by the federal government, are not bound by either of these jurisdictions; however, their close ties to land and forests in this area are recognized.

Legislation and policies that apply directly to the management of land and resources in this planning area are summarized in Appendix 2.

Integrated Resource Management and Planning

The Alberta Government has applied the philosophy of integrated resource management to bring about wise use and management of public land and natural resources. This philosophy recognizes that the management and use of one resource may affect the management and use of another resource. Cooperation, coordination and consultation are fundamental aspects of integrated resource management.

Integrated resource planning is a decision-making process used to achieve integrated resource management. In this process, the resource planning initiatives of government agencies are compared; these are subsequently confirmed or modified to produce a product acceptable to all involved agencies. Public involvement in planning ensures that public interests are considered. An integrated resource plan contains resource management objectives and a course of action that provides direction for field-level resource management decisions. Integrated resource plans apply to public land under the jurisdiction of the Province of Alberta, not to municipal, federal or private land.

2.2 How to Use the Plan

To guide resource and land use management, the planning area has been divided into five resource management areas (Figure 2). Each resource management area (RMA) has been identified on the basis of a common landscape, its current land use, and resource capability. The user of the plan should identify the RMA of interest, then refer to the Resource Management Area Activity Matrix (Table 2). This matrix summarizes the general compatibility of an activity with the intent of the RMA. Where a land use activity is given a "P*" designation, the reader must refer to the specific RMA in the plan, to determine the "condition" or guideline that will apply. Such guidelines may range from a simple "flagging" of a concern, to a more substantial guideline that limits how or where the activity is conducted.

Section 3.0 includes a resource summary, and the broad resource/land use objectives and guidelines that apply to the planning area. A resource management objective describes a condition or state for a resource or land use that can be achieved through a management action. A resource management guideline describes a management action or a condition of resource use that contributes to achievement of the resource management objectives.

Section 4.0 provides more specific objectives and guidelines that integrate specific characteristics and principal management intents of each RMA. Each RMA subsection provides a description of

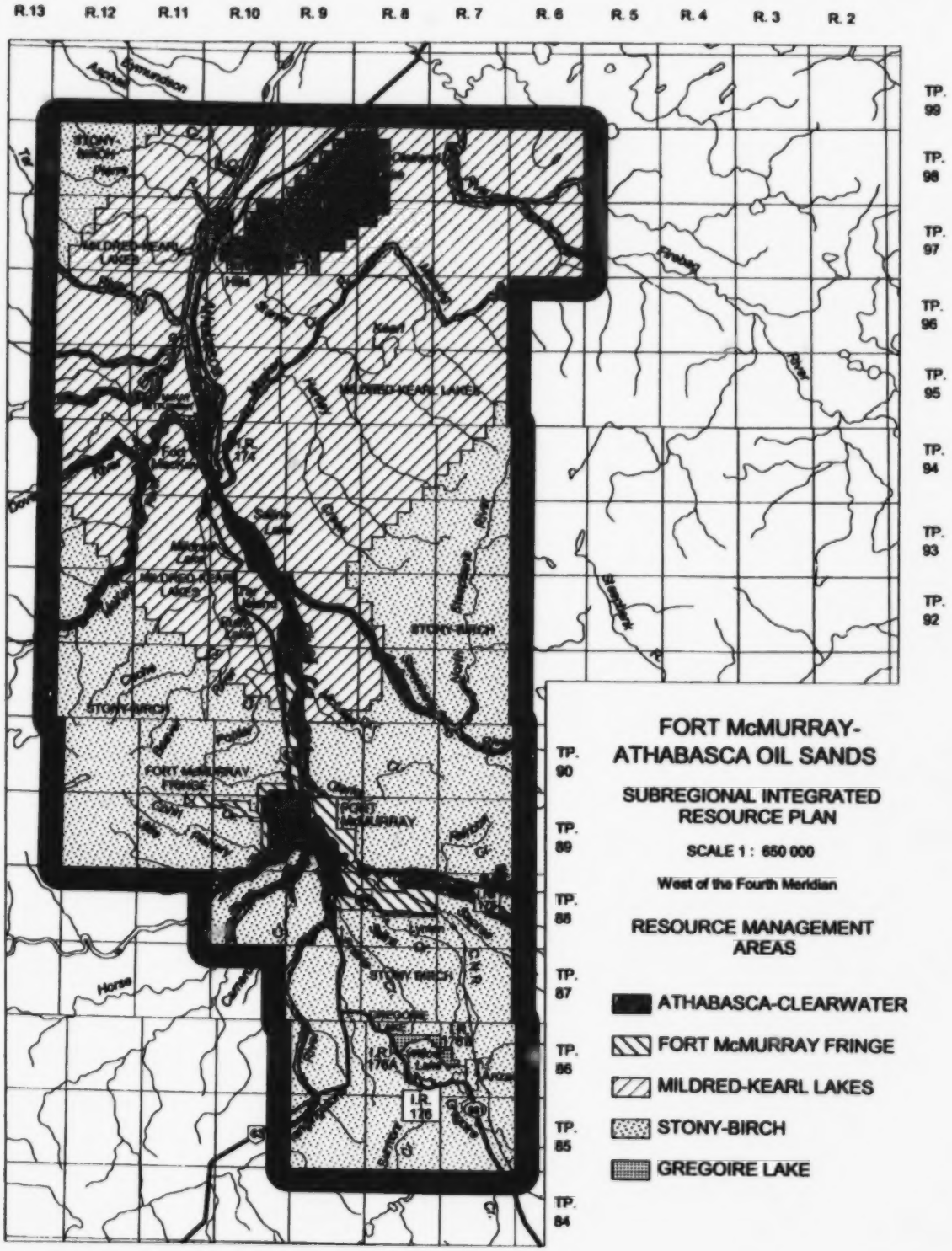

Figure 2. Resource Management Areas

TABLE 2. RESOURCE MANAGEMENT AREA ACTIVITY MATRIX FOR THE FORT MCMURRAY - ATHABASCA OIL SANDS INTEGRATED RESOURCE PLAN

			Resource Management Areas		
Resource/Land Use Activity	Fort McMurray Fringe	Athabasca - Clearwater	Gregoire Lake	Mildred - Kearl Lakes	Stony - Birch
Mineral Resources - Exploration & Development:					
Oil Sands	P*	P*	P*	P	P*
Petroleum & Natural Gas	P	P*	P*	P	P*
Other Minerals	P*	P*	X	P	P*
Surface Materials	P	P*	X	P	P*
Commercial Timber	P*	P*	P*	P	P*
Trapping, Hunting & Fishing	P	P	P	P	P
Agriculture:					
Market Gardening	P*	X	X	P*	P*
Grazing	P	X	X	P*	P*
Access:					
Non-Motorized	P	P	P	P	P
Motorized	P	P*	P*	P*	P*
Transportation & Utilities	P	P*	P*	P*	P*
Settlement:					
Country Residential	P	X	X	X	P*
Cottaging (Seasonal)	X	X	X	X	P*
Commercial	P*	P*	P*	P*	P*
Secondary Industry	P	X	X	P*	P*
Camping:					
Primitive	P	P	P	P	P
Auto Accessible	P	P*	P	P	P

P = Permitted Use — Uses that are considered to be compatible with the intent of the resource management area (RMA) under existing operating conditions, regulations and broad guidelines in this document (see Section 3.0).

P* = Permitted Use (Refer to RMA - specific guidelines) — Uses generally considered compatible in the resource management area they adhere to the respective conditions or guidelines provided for each RMA in this document (see Section 4.0).

X = Not Permitted — Uses that are not considered to be compatible with the intent of the resource management plan.

Note: See Glossary for definitions.

key resources, land uses, special features and characteristics that give the RMA its distinctive quality.

Section 5.0 summarizes recommended implementation tasks and strategies and provides information regarding plan management. The plan management section includes a description of mechanisms to implement, review and amend this plan.

3.0 BROAD RESOURCE MANAGEMENT DIRECTION

The following intents, objectives and guidelines address current resource management issues. The resource management objectives and guidelines consider existing uses, resource capabilities and opportunities.

Primary Plan Intents:

- To achieve the orderly, economic and efficient exploration and development of natural resources, and the use of land in a manner compatible with the environmental and social considerations of the planning area.

- To conserve land and natural resources required to meet the local and regional environmental and social needs in the planning area.

3.1 Mineral and Surface Material Resources

The planning area includes the most significant oil sands depositCthe Wabiscaw McMurray deposit. As the largest of the fifteen oil sands deposits in the province, it contains an estimated 890 billion barrels of crude bitumen (evaluated in-place) reserves. With conventional crude oil reserves declining, synthetic crude oil (from oil sands reserves) will become increasingly important to Alberta's total crude oil production.

Since 1967, the production of synthetic crude oil from oil sands has increased from less than five percent of Alberta's total oil production to 18 percent in 1994. Synthetic crude oil and bitumen production now account for 16 percent of total Canadian oil production. The economic benefits of mining Alberta's oil sands will continue to play an important role in further development of the planning area and the provincial economy.

The Wabiscaw-McMurray deposit covers an area of 4.5×10^6 hectares and is overlain by overburden varying in thickness from zero to 120 metres. The Surface Mineable Area (SMA) is defined as that part of the deposit where the total overburden and top reject generally do not exceed 75 metres and is therefore considered economic to develop by surface mining techniques. The SMA covers approximately seven percent of the total deposit. Surface mineable oil sands underlie 45 percent of the planning area. The remaining portion of the planning area is underlain by oil sands recoverable only by in situ technology. Ninety percent of the surface mineable oil sands, in the planning area is leased through 47 separate oil sands leases. Two large commercial surface mining operations, Syncrude Canada Ltd. and Suncor Incorporated, recover bitumen from the Athabasca deposit. In 1992, total cumulative production of synthetic crude oil from the two plants passed the one billion barrel mark.

Evaluation of the oil sands began in the early 1900s at the Bitumount site. Several experimental oil sands projects in the planning area are testing new mining and in situ recovery techniques. Oil sands extraction from deeper deposits has become increasingly feasible using in situ recovery techniques. This method of bitumen recovery is being evaluated, outside the surface mineable area, in the southern portion of the planning area. An experimental project, located 50 km northwest of Fort McMurray, known as the Underground Test Facility for the Mine Assisted In Situ Project (operated by Alberta Oil Sands Technology and Research Authority or AOSTRA), has been in operation for several years. This project is testing a process for recovery of bitumen from oil sands too deep for surface mining and too shallow for conventional in situ operations. Over the years, other in situ experimental projects have included Amoco Canada and Pan American Petroleum Corporation's Gregoire Lake project, the Husky

project at Kearl Lake and Petro Canada's projects near the Hangingstone River, Stony Mountain and Mildred Lake.

In association with bitumen recovery, sulphur and vanadium have been extracted to maximize recovery of minerals from the oil sands formation. These mineral resources, along with natural gas, conventional petroleum, titanium and gypsum, have moderate potential in the planning area. Salt and limestone have been produced or quarried periodically. The potential for uranium, gold and other metallic minerals is currently unknown; however, gold has recently become an attractive exploration target. Exploration permits cover a large area around Fort MacKay and extensive field programs have been conducted to assess the gold potential.

The limited supply of aggregate resources in the planning area is a constraint on the construction of buildings and infrastructure. An inadequate local supply could result in increased costs for housing, for road construction and maintenance. Hauling costs account for most of the expense of sand, gravel or crushed stone.

Two other resources available in limited quantities are peat and topsoil. They support local market gardening and landscaping activities. Wherever these resources are identified, efforts should be made to ensure they are used efficiently.

Broad Objectives:

1. To provide opportunities for industry to evaluate and develop mineral resources where proven reserves or productive formations exist.

2. To provide opportunities for the orderly exploration and development of mineral resources in previously unexplored areas or formations.

3. To encourage development of the surface mineable and in situ oil sands reserves in the Athabasca Oil Sands deposit.

4. To encourage development and use of new oil sands, mineral recovery and reclamation techniques that are more efficient and economical, and to reduce the impact on the environment and other resources.

5. To conserve surface material resources and provide opportunities for their orderly exploration and development.

6. To manage the limited supplies of sand, gravel and topsoil, so as to ensure availability, at reasonable cost, for infrastructure and landscaping activities in the area.

Broad Guidelines:

1. Mineral exploration and development will occur in a manner that minimizes impacts on the environment and other resource values.

2. Mineral exploration and development is generally permitted throughout the planning area, subject to current regulatory review and approval processes (e.g., provincial Geophysical Guidelines) and the direction established in this plan. Approvals already in place for minerals projects will not be altered as a result of this plan.

3. Surface disturbances resulting from mineral exploration and development will be progressively reclaimed. Sites will be reclaimed to a level of capability equivalent to the pre-disturbance level, optimizing the values of watershed, timber, wildlife, fish, recreation or other resources.

   Alternative reclamation approaches may be considered (e.g., reclamation of borrow pits or cooling ponds to waterfowl nesting or stocked fishing sites). See the Landscape Reclamation Strategy in Subsection 4.4 for suggestions regarding site-specific reclamation.

4. The location of aggregate deposits (i.e., sand and gravel), discovered during exploration or development activity, must be reported to Alberta Land and Forest Service. Aggregate resources not used during mineral development (e.g., industrial road construction) will be stockpiled.

3.2 Forest Resources

Portions of forest management units A2, A3, A5 and A7 (Appendix 3) provide a coniferous annual allowable cut of 458 500 cubic metres and a deciduous annual allowable cut of 488 000 cubic metres. Harvest levels are essential for sustaining the economic health and vitality of the forest industry in the region.

Alberta-Pacific Forest Industries (Al-Pac) has entered into a forest management agreement (FMA) with the province. This agreement gives them the rights to deciduous and coniferous timber in the planning area. Coniferous timber is also committed through timber quotas to Weyerhaeuser Canada Ltd. (FMUs A2 and A3), and Northland Forest Products Ltd. (FMUs A5 and A7). Miscellaneous Timber Use Areas have also been established for local residents and the forest industry.

As a result of fires, an age-class imbalance exists in many of the forest management units located in the planning area. Recent large-scale fires and resource development activity has resulted in an abundance of young age-class timber. Therefore, the amount of timber available for harvesting over the short term has been reduced. Reforestation on reclaimed areas and intensive forest management on other forested lands will occur. This management will increase productivity, and offset future loss of the forest land base to other development activities. Timber harvesting will be coordinated with such activity to ensure optimal wood use.

Protection of the forest involves the preservation of all ecosystems in and beyond the planning area. Wildlife, fish, vegetation and water quality all benefit, not to mention the importance of the forest for its commercial and aesthetic values.

The proximity of forested areas to Fort McMurray, and the desire of citizens to live near the natural environment (e.g., Saprae Creek) contribute to an increased potential for wildfire. Fire management activities include prevention, detection and suppression. The Alberta Land and Forest Service endeavours to implement efficient fire management programs that meet and can be integrated with all land and resource management objectives. Programs are designed to be responsive to site conditions and the expected fire occurrence and behaviour.

Under normal conditions the effects of insect and disease infestation should be less dramatic than a rapidly changing event such as a fire. Currently no known epidemic insect populations or diseases exist in the planning area. However, endemic populations of insects and disease and occurrences of mistletoe infestations are prevalent in the northern portions of the planning area. Alberta Land and Forest Service continues to monitor these situations. Control measures are implemented that prevent or reduce the risk to the health of the forests.

Broad Objectives (Commercial Timber):

1. To maintain sustainable levels of annual allowable cut to meet timber commitments including the future requirements of quota holders, local timber operators, local residents and FMA holders.

2. To promote the coordination of timber harvest planning in conjunction with other surface disturbances.

3. To ensure the forest capability on reclaimed land is at least equivalent to that which existed before the disturbance, yet to recognize other resource needs.

4. To promote intensive forest management for improved productivity of the land base and improved quality of wood.

5. To increase overall awareness of the potential of the timber resource for contributing to economic expansion and diversification.

6. To ensure that timber harvesting is conducted in a manner that retains the visual quality of the area.

Broad Guidelines:

1. Progressive and effective harvesting and reforestation methods will be practised in accordance with the Forests Act, Timber Management Regulations, Timber Harvest Planning and Operating Ground Rules and established policies.

2. Timber salvage cutting will occur wherever possible, before any development activity, or in the event of fire, insect or disease damage. Alberta Land and Forest Service must be involved in matters concerning the orderly removal and salvage of timber, as per the regulations under the Forests Act.

3. Areas intended for intensive forest management, future timber development, timber harvesting or miscellaneous timber use by local residents and the forest industry will be identified by Alberta Land and Forest Service, in accordance with approved forest management plans.

4. Public awareness will be promoted through forest information sessions, demonstration forests or other similar programs and initiatives. An effective public involvement process will be part of the development of all forest management plans.

Broad Objectives (Forest Protection):

1. To protect the resources and values of forested areas from damage and destruction by wildfire, insects, disease or other causes. This protection will minimize negative economic or social impacts on the planning area, as well as maintain public safety.

2. To minimize the risk of wildfire resulting from resource and land use development activities.

Broad Guidelines:

1. Land-use related programs, projects and developments should be designed in a manner that minimizes the risk of wildfire. Alberta Land and Forest Service will be consulted as part of the existing referral process; thereby ensuring that fire management programs are effectively applied and administered at the early stages of developments.

   Consultative services concerning forest protection measures should also be made available to the Regional Municipality of Wood Buffalo by Alberta Land and Forest Service. Such measures might include the following: location of country residential subdivision sites, building orientation/location, use of fire-resistant building materials, adequate access to and from sites, reduction of combustible fuels and sufficient water sources for fire suppression purposes.

2. Timber stands will be monitored for insect, disease and other environmental disorders. Appropriate management measures will be applied as required.

3.3 Settlement

Fort McMurray has the service capacity to accommodate approximately 65 000 persons. In the long-term, Fort McMurray and other settlements (e.g., Fort MacKay, Anzac) may require room for expansion. Severe constraints to development exist in the area. Unsuitable soils, unstable slopes and the potential for flooding combine to make much of the planning area undesirable for buildings and other structures. The few sites that have potential for settlement are interspersed with poorly drained or very steep land. Furthermore, potential settlement areas may also be suitable for activities such as resource development, recreation and agriculture.

Future residential development is limited to registered subdivisions developed under an approved Area Structure Plan. In 1982, the Public Lands Division made land at Saprae Creek available in response to the demand for country residential development. It is anticipated that this demand will continue to increase.

Although some secondary industrial development is directly related to natural resources, other industrial activities provide commercial services essential to a developing area. These services

include warehousing, storage, manufacturing and equipment repair. Few industries have been established outside of Fort McMurray, due to the lack of municipal infrastructure (sewer and water services). As development activity increases, demand for municipal services will increase to accommodate commercial and industrial activities that require accessible and large land areas outside the urban service area.

Broad Objectives:

1. To work with local authorities ensuring that suitable lands near Fort McMurray and other existing settlements remain available for future expansion requirements.

2. To ensure that future outlying residential, industrial and commercial development is situated in a manner that minimizes major municipal servicing costs and/or reduces conflicts with adjacent land uses.

3. To ensure compatibility with the policies of the I.D. 18 - North Land Use Order #2 as well as any other statutory plans and bylaws administered under the Municipal Government Act.

Broad Guidelines:

1. Urban growth will continue to be concentrated in existing communities, with emphasis on the urban service area of Fort McMurray.

   Where provincial public land becomes transferred to another jurisdiction (e.g., municipal, federal), the policies in this plan would no longer apply.

2. Country residential development will continue to be accommodated in the Saprae Creek Country Residential Subdivision until 80 percent of the lots are sold. Thereafter, additional development of this nature, including cottages, may be approved in the Stony-Birch Resource Management Area (Section 4.5) as part of a subdivision plan under the authority of the I.D. 18 - North Land Use Order No. 2 and the Municipal Government Act.

   Outside of urban areas, residences accompanying other land use/resource activities will not be permitted except where provision is made under the authority of Alberta Environmental Protection and the Regional Municipality of Wood Buffalo.

3. Secondary industry will be encouraged to locate in established industrial areas (e.g., Lynton Industrial Park at NE 22, Twp. 88, Rge. 8, W4M) or within settled areas such as Fort McMurray, Fort MacKay and Anzac. Alternatively, industrial activity should be concentrated (e.g., in planned industrial parks) to facilitate the efficient provision of roads and other municipal services. Secondary industrial activity is defined as industrial uses that are clearly and directly related to and necessary for the operations of a resource-based industry. Such development must be compatible with the policies outlined in either the I.D. 18 - North Land Use Order No. 2, or any Area Structure Plans that have been approved under the authority of the Municipal Government Act.

4. Commercial development is encouraged within existing settlements. Otherwise, such developments shall be generally limited to locations along primary or secondary highways, provided they adhere to the policies prescribed by the Public Highways Development Act, the current I.D. 18 - North Land Use Order No.2 and any Area Structure Plans approved under the Municipal Government Act.

3.4 Access and Infrastructure

A major consequence of resource development is the need to transport people, materials and energy. Development of the oil sands and the resulting growth of Fort McMurray have generated, and at the same time been facilitated by a transportation system including an airport, Highways 63, 69 and 881, a freight-only railway, and pipelines and transmission lines. A network of industrial, all-weather and winter roads make portions of the planning area accessible to the general public, and resource users.

Resource development requires provision of infrastructure to continue. This infrastructure also enhances Fort McMurray's role as a regional centre for northeastern Alberta. Limited transportation linkages to this area have hindered the expansion of other economic activities. For example, recreation and tourism development is limited because lakes in the vicinity of Fort Chipewyan are difficult to reach by road. Highway 63, the main road connection with the rest of the province, is currently being widened. This upgrading may encourage increased travel into the planning area.

New or improved access into wildland areas can adversely affect wildlife and fish populations, the quality of hunting, fishing and other outdoor recreational activities. However, increased access provides opportunities for wildlife viewing.

Broad Objectives:

1. To ensure that when resource development in an area takes place, due consideration is given to provincial primary highway planning. Specific information should be obtained from Alberta Transportation and Utilities, Planning Branch

2. To minimize adverse effects of resource development on the various resources and communities and to minimize cost and duplication of effort.

3. To minimize adverse effects of infrastructure development while at the same time promoting growth and prosperity in a region.

4. To work with local authorities to ensure that secondary highways and local roads are developed to meet regional needs.

Broad Guidelines:

1. Linear development projects (e.g., roadways, railways, transmission lines and pipelines) will be encouraged to use existing (e.g., Alberta Oil Sands Pipeline Corridor) or planned (e.g., Athabasca Oil Sands Multiple Use Corridor) access routes or corridors to minimize duplication of effort and expense, and also minimize impact on resources. Access will be developed and reclaimed in a manner that considers environmental concerns as well as economically efficient options.

   Wherever possible, linear development will not occur parallel to rivers within the valleys or within 100 m of the top of the valley breaks. This restriction will help to minimize erosion, slope instability and disturbance of wildlife habitat and visual aesthetics.

2. Public access to recreation opportunities, most notably to the major rivers and lakes, will remain a priority.

3. Off-highway vehicle use (e.g., summer/winter motorized recreation) will be restricted as required on areas of industrial activity, reclamation sites and environmentally sensitive areas (e.g., steep slopes).

3.5 Agriculture

Low-quality soils and unfavourable climatic conditions limit the agricultural opportunities. Favourable microclimates provide some small-scale market gardening opportunities in the Clearwater River valley. Currently, there is little demand for cattle grazing; some horse grazing associated with recreational use has taken place. Agricultural developments are not expected to be major factors contributing to the economic diversification of the planning area.

Broad Objective:

1. To manage the limited agricultural land base to meet the local demand.

Broad Guideline:

1. Agricultural activity will be limited, generally, to the Fort McMurray Fringe RMA and reclaimed areas as identified in the Landscape Reclamation Strategy.

3.6 Recreation and Tourism

The tourism industry presents opportunities for diversifying the local economy. The urban service centre of Fort McMurray is a principal attraction for visitors, owing to its strong association with the oil sands industry (e.g., Oil Sands Interpretive Centre). Fort McMurray serves as a staging area and service centre for tourists who come to experience the backcountry of northern Alberta (e.g., Wood Buffalo National Park, Lake Athabasca and the Athabasca Delta.

Fly-in hunting and fishing opportunities may have limited development potential because of the shortage of good habitat and the low reproductive rates of wildlife and fish species. The area has potential as a base for river touring, ecotourism and tours based on wildland adventure themes. A number of commercial guides based in Fort McMurray rely on established clientele, mainly from the United States. The potential exists to attract tourists from overseas.

Locally, the most popular forms of recreation are random and extensive recreational activities (e.g., fishing, hunting, horseback riding, boating, OHVs). These activities occur mainly in or adjacent to the Athabasca and Clearwater river valleys and larger lakes (e.g., Gregoire Lake, Maqua Lake). In addition to recreation facilities in Fort McMurray, others include Alberta Land and Forest Service campgrounds at Maqua Lake and Grayling Creek, Alberta Natural Resource Service road access campground along the Hangingstone River, the Gregoire Lake Provincial Park and a privately managed campsite at the Gregoire Lake Indian Reserve. These facilities are not used to capacity currently.

Several sites of significant ecological value (Gregoire Lake and La Saline Springs Natural Areas) and historical value (Bitumount Historic Site) have potential for extensive recreational and tourism experiences.

Broad Objectives:

1. To manage and protect areas with significant recreation and tourism capability.

2. To promote private sector development of wilderness recreation and tourism opportunities, with emphasis on wildland adventure experiences (e.g., hunting, fishing, river touring, trapline tours, photography and wildlife viewing).

3. To promote tourism opportunities related to current and historical oil sands extraction.

4. To promote a range of appropriate extensive recreational and tourism opportunities focusing on the lakes and rivers, but within the biological and physical capability of the resources.

5. To encourage the provision of tourism facilities and services required to meet demands for leisure- and business-related tourism opportunities.

6. To maintain and expand, where appropriate, government or privately provided recreation- and tourism-related facilities such as campsites, day-use sites, viewpoints and boat launches.

Broad Guidelines:

1. The private sector and non profit organizations will be encouraged to take an active role in identifying and developing recreation and tourism opportunities. Assistance with respect to the provision of data, site selection, business counselling and liaison with other government agencies will be provided by Alberta Economic Development and Tourism. Similar service will be extended to all communities and municipalities that wish to position their tourism products.

2. Proponents of recreation and tourism activities are expected to demonstrate project feasibility before approval is granted. For developments that require fishing to support their business plan, consideration should be given to ensuring that sufficient fish stocks exist to sustain the proposed use. Private development should, wherever possible, complement existing public recreation programs.

For developments situated along or near shorelines, fish habitat losses shall be replaced nearby (see Section 3.8) and the amount of disturbed shoreline shall be limited in extent.

3. Management of random camping activity will be determined on the basis of ongoing site monitoring. Should impacts resulting from this activity exceed acceptable levels site hardening, closure and rehabilitation, or relocation of the activity to other identified sites will be considered.

4. Private recreation and tourism proposals requiring the leasing of public land will be reviewed through the Alberta Tourism and Recreation Leasing Program. This process ensures the proposals meet with provincial government policy and site-specific requirements (including environmental protection).

3.7 Water Resources

The landscape is dominated by the Athabasca River channel and its tributaries. The Athabasca River provides water for municipal and industrial uses. Currently, Fort McMurray, Syncrude and Suncor Inc. are the largest municipal and industrial users of water.

In recent years, northern Alberta experienced a surge of development, primarily in the forest industry. In particular, several new pulp mills have been approved and/or constructed in the Peace and Athabasca river basins. Public awareness regarding the cumulative environmental effects of these and other developments has increased. Local residents and interest groups have voiced their concerns to government and review panels.

In July 1990, the Federal Government and Alberta announced a joint study in the Peace, Athabasca and Slave river basins. The objectives of Northern River Basins Study are:

- To provide a scientifically sound information base for planning and management of the water and aquatic environment of the study area so as to enable its long-term protection, improvement and wise use;

- To collect and interpret data and develop appropriate models related to hydrology/ hydraulics, water quality, fish and fish habitat, riparian vegetation/wildlife and use of aquatic resources for use in predicting and assessing cumulative effects of development; and

- To ensure that technical studies undertaken in the basins are conducted in an open and cooperative manner and that their purpose, progress and results are reported regularly to the public.

The Athabasca River supports many wildlife and fish species. It also offers scenic beauty and access to an extensive system of camping and fishing sites. Upstream from Fort McMurray, several reaches of the river offer white water rapids, a challenge to more experienced canoeists.

During the fur trading period, the Athabasca and the Clearwater rivers served as the primary transportation corridors in the region. This trade route influenced the establishment of Fort McMurray at its present site. Although volume has declined, commercial freight is still transported by river barge from Waterways (lower Fort McMurray), north to Lake Athabasca. The maintenance of the river channel by dredging and the use of navigation markers enhances the safety of the river for pleasure craft as well.

With the exception of Gregoire Lake, lakes in the planning area do not offer significant opportunities for intensive recreation development. Kearl and McClelland lakes (and associated wetlands) have minimal opportunities because of their shallow depth.

<u>Broad Objectives:</u>

1. To manage the water resources on a multi-purpose basis to help achieve the overall economic, environmental and social objectives of the province.

2. To maintain stream flows and protect water quality and quantity for short- and long-term requirements for human needs, municipal, agricultural and industrial purposes, and for instream uses including fisheries, wildlife and recreation.

3. To minimize the impact of development on water resources (quantity and quality).

4. To minimize the hazards and potential damage from flood events, with an emphasis on the Athabasca and Clearwater rivers floodplain areas in the urban service area of Fort McMurray.

Broad Guidelines:

1. Water resources will be managed on a drainage-basin basis reflecting local, regional and provincial needs and priorities.

2. The public will be encouraged to participate in water management planning programs and decision making efforts in a meaningful way.

3. Water quantity and water quality will be managed together.

4. There will continue to be consultation between provincial agencies to ensure water resources and other environmental matters are given full consideration in evaluating community water supply needs, land uses and resource development proposals. Further, the referral systems and other administrative practices designed to ensure implementation of appropriate protective conditions, under government legislation, shall be maintained and, where necessary, improved.

5. The authorities regulating land uses will be encouraged to impose development conditions to ensure protection of the yield, timing and quality of the water resource.

6. Re-routing of the rivers and streams in the planning area will be discouraged. When required for the management or development of resources, it would be considered on a site-by-site basis. If approved, the provincial government agencies involved will work together with the proponent to design and implement strategies to mitigate short- and long term losses to fisheries, wildlife and other resource values.

7. Water quality and quantity monitoring programs will be maintained to ensure that data are available on which to base management decisions.

8. The domestic water supply needs of the urban service area of Fort McMurray, the hamlet of Fort MacKay and other existing or future settlements situated within, or downstream from, the planning area will continue to be recognized through the existing review and impact evaluation processes used for land use developments.

3.8 Fisheries

The capability of the existing fisheries to meet angling demand is limited. This limitation is primarily due to the shortage of fish-bearing lakes, slow growth and low reproduction rates of fish in the colder waters, and the susceptibility of fish populations to over harvest. Disturbances to the quality and quantity of the water also negatively affect the fisheries.

Since there is a high demand for this limited resource, allocation decisions may be necessary. The Fish and Wildlife Policy for Alberta (1982) has indicated a priority for use of the fisheries resource. These priorities, in order, are as follows: domestic or Native use, recreational use, and commercial uses. It may be necessary for users to demonstrate fish stocks are not only available for their use, but remaining stocks are sufficient to meet the demand of higher priority uses now and in the future.

Of the lakes in the planning area, only Gregoire Lake supports sport fish populations year-round. It contains walleye, lake whitefish, northern pike, burbot, suckers and yellow perch. The Texaco Trout Pond near Lynton is stocked annually with trout.

The Athabasca and Clearwater rivers, including their tributaries, support a limited population of species found in Gregoire Lake and a few other sport fish such as goldeye and mountain whitefish. With time, these river and stream fisheries will gain importance because of the scenic, sport fishing opportunities they provide

near roadways or through increased frequency of boat trips. Since these fisheries are especially susceptible to overfishing, greater restrictions (e.g., size limits) may be required.

The Federal Fisheries Act stipulates that development activities permitted within or immediately adjacent to fish-bearing waters must not disturb or adversely affect the fish habitat of those waters, unless specifically authorized. The federal Policy for the Management of Fish Habitat, states that fish habitat lost in one location shall be replaced with comparable fish habitat in a nearby location.

Broad Objectives:

1. To maintain and enhance existing aquatic habitat suitable to support productive fish populations.

2. To maintain healthy fish populations and fishery production at least to their current levels, and to enhance them wherever possible.

3. To maintain and enhance the existing variety and distribution of fishing opportunities with emphasis on naturally reproducing populations.

4. To develop new fishing opportunities, where possible, to meet increasing demand.

5. To ensure adequate timing and volume of instream flow to meet fish requirements.

6. To minimize the impact, specifically on fish-bearing waters, of agricultural, industrial and other uses.

Broad Guidelines:

1. The limited fisheries resource will be allocated to meet the demand of high priority user groups. It may be necessary for users to demonstrate how they will protect sufficient fish stocks for higher priority users, now and in the future.

2. Fisheries habitat protection guidelines shall be applied to local plans and development proposals that are reviewed in accordance with the existing referral system. Where necessary, mitigative techniques will be used to compensate for habitat loss, to minimize siltation and to provide initiatives for stream habitat enhancement.

3. Fisheries production will continue to rely primarily on naturally reproducing populations. Artificial stocking will be used where appropriate and as opportunities arise to restore lost populations or create new ones. The development of new ponds for stocked "put and take" fisheries will be of secondary importance.

4. Stream and lake fisheries will be managed to maintain the naturally reproducing fish populations.

5. Unrestricted legal public access to water bodies containing fishery resources will be maintained.

3.9 Wildlife

Wildlife resources contribute to the economy by providing benefits to guides, outfitters, trappers, Native people, airline charter companies and tourist operators. Local residents use wildlife resources for such recreational activities as hunting, fishing, photography and viewing. For Natives and trappers, these resources are an important part of their traditional heritage and livelihood.

The planning area's wildlife populations are limited in diversity and abundance because of low habitat capabilities and low reproductive rates. The species present and their reproductive constraints are typical of the northern boreal mixedwood ecosystem. The planning area is partly surrounded by known, regularly occupied woodland caribou range. The areas of good caribou habitat (forested fens and forested bogs) within the planning area, mostly south of the Clearwater River, are not known to be regularly occupied by caribou. The river and stream valleys provide particularly important winter range for a number of species, including moose and deer. The moose is the principal big game species sought in the planning area, with black

bear a distant second. Habitat is very limited for the white-tailed deer, and its numbers are especially subject to fluctuations in response to hard winters. Hunting for moose by local Natives is particularly important as a traditional activity and as a source of meat.

The variety of furbearers present and the number trapped varies in response to natural wildlife cycles and fluctuating prices. The principal species of interest comprise fisher, marten, otter lynx, wolf, muskrat, beaver and mink.

The planning area contains a relatively small number of water bodies suitable for waterfowl. Several water bodies, locally important as breeding sites, serve as migration stopover and feeding sites for large numbers of waterfowl in spring and fall. Ruffed, spruce and sharp-tailed grouse are also found and hunted in selected areas. A Watchable Wildlife site near Poplar Creek provides good birdwatching opportunities for a number of songbird species, waterfowl and sharp-tailed grouse. Considerable opportunity exists for wildlife viewing adjacent to main roads and rivers.

Broad Objectives:

1. To minimize damage to wildlife habitat and, where possible, to enhance the quality, diversity, distribution and extent of productive habitat.

2. To maintain, and, if possible, to enhance the diversity, abundance and distribution of wildlife resources for Native subsistence, recreational and commercial benefits. Such resources include the following:

   (a) Black Bear - To maintain, within the current range of distribution, the current fall population of 300 black bears and encourage greater harvests to increase recreational benefits beyond the current level.

   (b) Ungulates - To maintain the current wintering population of 200 deer. To maintain habitat to support, throughout the current range of distribution, a wintering population of 2000 moose. Currently, the population of about 1000 moose is kept low by natural predation and hunting. Special management techniques may be able to return this population to its previous, higher levels.

   (c) Bird Game - To maintain current average populations of bird game, recognizing that some of these populations are highly cyclical.

   (d) To maintain upland and aquatic habitats required to retain the current furbearer populations.

3. To protect wildlife species considered sensitive to disturbance or environmental change (e.g., pileated woodpecker) and to promote increased populations and distribution of species considered rare or endangered (e.g., wolverine, woodland caribou).

4. To promote and develop opportunities for both consumptive (e.g., hunting, trapping) and nonconsumptive (e.g., viewing, photography) uses associated with wildlife.

5. To promote the use of the fur resource within its capability, and, at minimum, to maintain the trapping industry at its current level.

6. To promote activities and methods (e.g., proper garbage management) that will minimize the number and costs of nuisance wildlife events.

Broad Guidelines:

1. Hunting will be managed under existing guidelines and regulations to achieve an equitable use of the resources among the three user groups: Native subsistence, recreational and commercial uses.

2. Wildlife habitat protection guidelines will be applied to development proposals that are reviewed in accordance with the existing referral system. In important wildlife areas, techniques (e.g., timing constraints and access restrictions) will be recommended to minimize and mitigate possible habitat loss, disruption

of wildlife populations and lost recreational (e.g., hunting, wildlife viewing) or commercial (e.g., guiding, trapping) opportunities.

3. Conflicts between trappers and other users will be reduced through consultation with trapping area holders during detailed planning of a development's operation.

4. Priority will be given to the management and protection of the habitats and populations of rare and endangered species.

5. In important wildlife areas and for wildlife management purposes, techniques (e.g., locked gates, rollback) may be applied on situations of new industrial access.

6. Wildlife-viewing opportunities will be encouraged.

3.10 Ecological Resources

The planning area lies predominantly in the Mid to High Boreal Mixedwood Ecoregion, which covers about one-third of the entire province. Many of the most significant features of this region are located within the planning area including the meanders on the rivers, the karst topography north of Fort McMurray, the La Saline and Gregoire Lake Natural Areas and the extensive McClelland Lake wetland.

Broad Objectives:

1. To protect representative, significant and unique examples of the natural features, landscapes and ecosystems of the Boreal Mixedwood Ecoregion.

2. To provide for the recreational, scientific or educational use of ecological resources, yet ensure that features are maintained in a natural state.

Broad Guideline:

1. Ecological resources will be identified by government agencies and individual groups (e.g., naturalist groups). Following an assessment and review of these resources, public land reservations will be established and maintained. Especially significant resources will be established by Order in Council under the authority of various acts (Wilderness Area, Ecological Reserves and Natural Areas Act).

3.11 Historical Resources

Two major themes in Alberta's historic development are well represented in the planning area, the fur trade and resource development. From the late 18th century to the late 19th century, the fur trade was the most significant factor in Alberta's history. Three known fur trade posts were established before the North West Company combined with the Hudson's Bay Company in 1821. These posts included Fort of the Forks, Pierre au Calumet and Beren's House. Subsequently, fur trading posts were established at Fort McMurray (1870) and Fort MacKay (ca. 1870). The former, established by Henry Moberly in 1870 for the Hudson's Bay Company, was named after Chief Factor William McMurray. It closed in 1899 because of better trading at Fort MacKay. Although formally named after Scottish pioneer and fur trader Dr. William Morrison MacKay, Fort MacKay was known as "Little Red River" until 1897. These communities have since witnessed the transition from fur resources to the development of the region's oil sands.

Between 1900 and 1920, several exploration wells were drilled to evaluate the oil sands in the area. The best historic example of oil sands development activity is the Bitumount Site, a pioneering project in the development and improvement of the hot water extraction process. The site has been designated as a provincial historic resource. At another important site, Abasand Oils Ltd., bitumen was being extracted and refined by 1941.

Archaeological evidence from northeastern Alberta and adjacent areas suggest that the planning area has been occupied by man for the past 10 000 years. Although over 320 prehistoric archaeological sites have been recorded, archaeological resources in the planning area are still largely unknown. Most inventories, which

encompass only a small percentage of sites, have been directed toward tracts of land targeted for oil sands extraction, or research programs (for the most part, local environs of the Athabasca River and its tributaries).

The prehistoric settlement pattern appears to have been largely riverine with seasonal use of large tracts of boreal-muskeg, which cover much of the subregion. Local water bodies such as Gregoire Lake and well-drained lands are also highly significant in terms of their potential for archaeological resources.

Two valuable sites that are considered to be of utmost importance to the further understanding of the prehistoric use of the planning area are the Beaver River quarry archaeological site and the Bezya site.

Broad Objective:

1. To protect, for educational, interpretive and scientific purposes, historical resources from potential or actual resource development impact, and to conserve these historical resources for future generations.

Broad Guideline:

1. Before development occurs that may result in the disturbance of the land surface, an Historical Resources Impact Assessment should be conducted as outlined under the Historical Resources Act. The Archaeological Survey of Alberta will participate in the existing referral system to review development proposals where historical resources may be affected.

3.12 Population Health

Population health acknowledges an entire range of factors that determine health of the population in a region. These factors include: income and social status, social support networks, education, employment and working conditions, physical environments, biology and genetic endowment, personal health practices and coping skills, healthy child development and health services.

It is recognized that a healthy population contributes to economic prosperity, reduced expenditures on health and social problems, and overall social stability and well-being in Albertans.

Broad Objectives:

1. To provide opportunities for public, industry and government to consider the influence of health on development of public land and resources in a region based on a determinants of health approach.

2. To encourage the use of population health information in planning the orderly development of public land and resources in a region.

3. To minimize adverse effects on population health while at the same time promoting development and prosperity in a region.

Broad Guideline:

1. Wherever relevant, consider population health aspects of exploration and development of natural resources in the planning area based on a determinants of health approach.

4.0 RESOURCE MANAGEMENT AREAS

The specific objectives and guidelines have been developed to promote the management intent identified for each resource management area (RMA). The objectives provide a statement of a desirable state for resource or land use activities. The guidelines provide direction on how to achieve the objectives, recognizing that conflicts may exist between specific resource management objectives.

In situations where specific resource management objectives and/or guidelines have not been presented for an RMA, the broad objectives and guidelines from Section 3.0 will apply. Resource or land use activities that currently exist, or have been approved before the completion of this plan, will be permitted to continue under the

established regulation. At a point of renewal, existing dispositions will be reviewed to ensure consistency with the plan's intent.

The RMA boundaries (Figure 2) have been defined using the Alberta Township System. Private land within the boundaries of the RMAs, including the urban service area of Fort McMurray, the hamlets of Fort MacKay and Anzac, and Federal reserves are outside the jurisdiction of this plan. The approximate size of each RMA in the planning area is listed as follows:

Resource Management Area	Area (km^2)	Percent
Fort McMurray Fringe	204	3
Athabasca-Clearwater	755	10
Gregoire Lake	52	1
Mildred-Kearl Lakes	2067	43
Stony-Birch	3085	43
Total Planning Area	**7 163**	**100**

4.1 Fort McMurray Fringe Resource Management Area

The Fort McMurray Fringe Resource Management Area (Figure 3) is characterized by boreal forest with steep-sided river valleys. These valleys provide an aesthetic appearance to the fringe area. They also provide extensive recreation opportunities in proximity to Fort McMurray. Fort McMurray is surrounded by provincial public land. Land development within Fort McMurray (adjacent to the Fort McMurray fringe RMA) is administered under the Fort McMurray General Municipal Plan and additional plans and bylaws under the authority of the Municipal Government Act.

The Fort McMurray Fringe Resource Management Area consists of four segments (Figure 3). Three of these (southeast, northern and western) have a linear orientation containing access corridors radiating outward from Fort McMurray.

The southeast segment is the most developed in terms of the variety and scale of activity. Major transportation routes include two provincial highways (Hwy. 63 and Hwy. 69), the Fort McMurray airport and a railway line to Lynton. Other activities such as the Saprae Creek Country Residential Subdivision and the Spruce Valley Ski Hill have been developed partially due to the aesthetic and recreational values associated with the Clearwater River valley. Within the more sheltered confines of the valley, market gardening takes place on better soils.

South of the Clearwater River valley, other land uses have taken advantage of the access created by the two provincial highways. These include a range of industrial (sulphur processing, secondary industrial park), institutional (Keyano Heavy Equipment Campus, minimum security camp, fire fighters holding camp, sanitary landfill and the SPCA), commercial and recreational uses (drive-in theatres, stables, sleigh and hay rides).

The northern segment has a similar pattern of land use along Highway 63. This corridor passes along the Athabasca River floodplain and contains a limited amount of industrial (e.g., sawmill, asphalt plant, topsoil processing) and commercial (e.g., auto wreckers, towing and storage, auto race track) uses. In this segment, land suitable for development is limited. Pressure to accommodate more highway-oriented activity may result, particularly if the highway continues to serve as the principal road access to the northern parts of the planning area and beyond. In response, the Regional Municipality of Wood Buffalo has initiated preparation of the Highway 63 Area Structure Plan within the city boundaries to address these concerns.

Surface mineable oil sands extend into the northern segment of this RMA. This RMA contains portions of three oil sands leases. Metallic and industrial minerals permits indicate interest in the quarriable limestone along the river valley, as well as in the potential for other minerals.

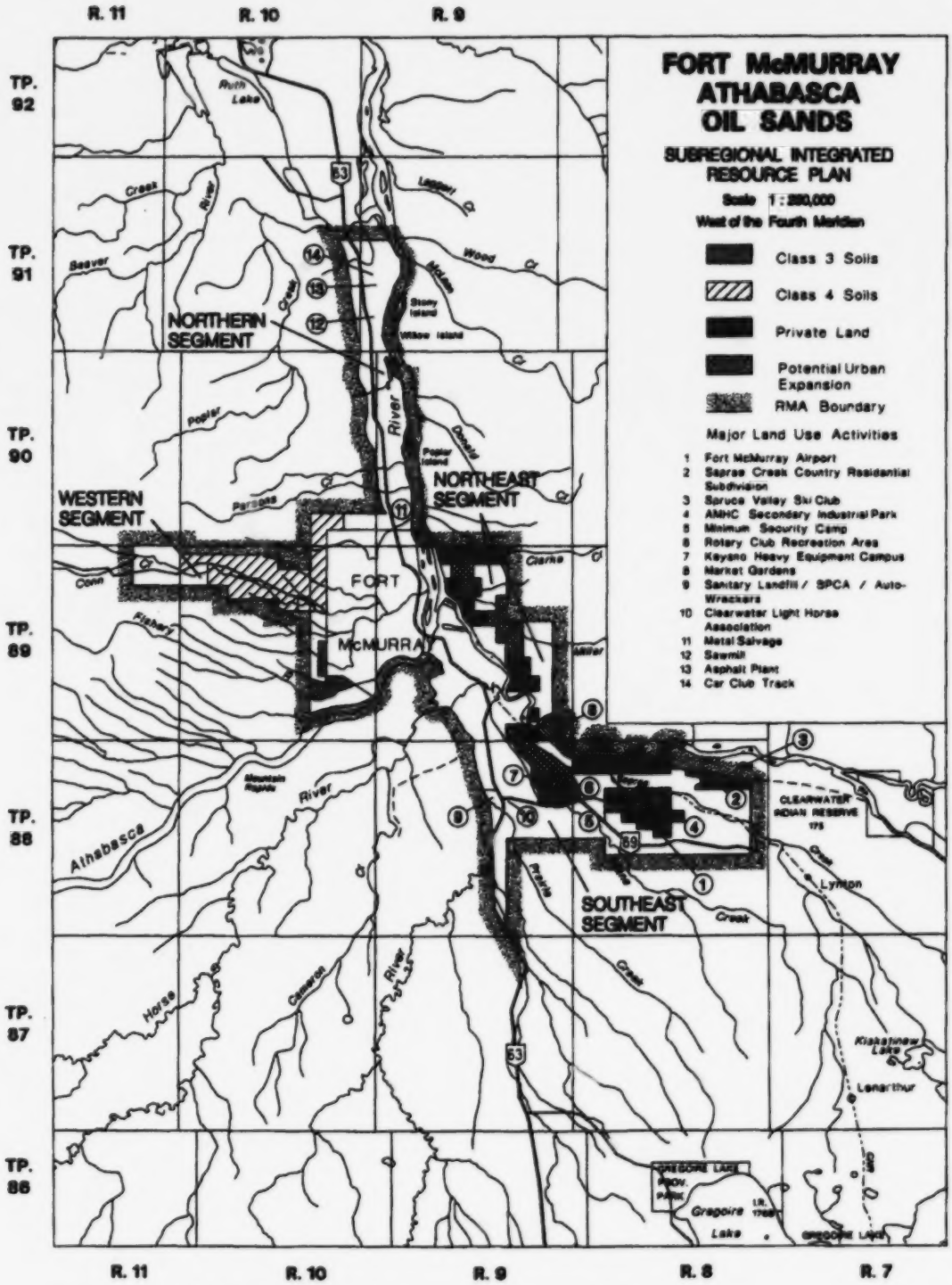

Figure 3 Ft. McMurray Fringe Resource Management Area

Of the three linear segments, the western segment is the least developed. Access consists of a gravel forestry road, which terminates about 30 km from the city at the Thickwood Hills forestry
tower. This road serves the needs of Alberta Land and Forest Service and some resource development activity. The road also provides access to extensive recreational opportunities in the Thickwood Hills area. Road upgrading would make it more attractive for other kinds of land uses requiring highway access. The only activity currently situated along this road is a horse-holding operation on public land. In the short term, the western segment could take advantage of a significant amount of Class 4 soils, that are well suited for domestic livestock grazing.

The northeast segment, situated directly across the Clearwater River from Fort McMurray, is currently inaccessible by road. The area contains some significant gravel deposits and is the preferred location for future expansion of Fort McMurray.

Resource management should take into consideration the needs of a growing city. Land uses and infrastructure required to serve Fort McMurray should be planned to avoid covering over valuable resources that are required locally. A country residential development and an airport have been established on relatively scarce gravel deposits. The local cost of sand and gravel may have increased because of the resulting greater hauling distance from alternative sources. Similar occurrences should be minimized or avoided.

Management Intent:

To manage public land and resources in recognition of the multiple uses required to service and enhance development of the urban service area of Fort McMurray.

Mineral and Surface Material Resources

Objective:

1. To explore and develop mineral and surface materials in a manner that is sensitive to land use and infrastructure activity associated with the urban service area of Fort McMurray.

Guidelines:

Surface Mining:

1. Commercial development of oil sands, using surface-mining techniques, is not permitted.

In Situ:

2. Experimental and commercial in situ oil sands operations and the exploration and development of conventional petroleum and natural gas, metallic and quarriable minerals will be permitted where conflict with adjacent land uses can be mitigated.

3. Impacts of mineral developments on aesthetic and wildlife values will be minimized by; limiting the line-of-site on access trails to 200 m; retaining a vegetation buffer between the development site and public roads; and clearing the site in an irregular shape.

4. Surface materials (including sand, gravel, peat and topsoil) will be protected from conflicts with other land uses. Reservations will be placed on significant surface deposits (Classes 1 to 3). Such deposits will be managed on a site-by-site basis through the existing referral system.

Forest Resources

Objective (Commercial Timber):

See Broad "Commercial Forest" Objectives (Section 3.2).

Guideline (Commercial Timber):

1. Timber harvesting north of Fort McMurray, and between Highway 63 and the Athabasca River, will recognize opportunities for extensive recreation activities and the importance of maintaining a safe and aesthetically pleasing approach to Fort McMurray.

Settlement

Objectives:

1. To ensure that additional country residential and industrial development locates in the most suitable areas.

2. To ensure that highway-oriented development (e.g., commercial or industrial) does not minimize or eliminate opportunities to maintain or provide safe highway access and an aesthetically pleasing approach to Fort McMurray.

Guidelines:

1. Lands designated "Potential Urban Expansion" (Figure 3) will be retained to accommodate future growth requirements of Fort McMurray. Specific conditions may be applied to leases to ensure consistency with the intent for these areas. Sale or development of these lands will require approval from the Regional Municipality of Wood Buffalo.

2. Country residential development will only be permitted in the Saprae Creek Country Residential Subdivision. Additional country residential development may be considered in the Stony-Birch RMA.

3. Secondary industrial development outside of Fort McMurray or established industrial parks may have to abide by guidelines established under the Improvement District's Airport Vicinity Protection Area Program. Otherwise, Section 3.3 Settlement, Broad Guideline #3 will apply.

4. Only recreational development, highway commercial development and industrial development will be permitted. These developments will be adjacent to highways and will maintain and/or enhance safe highway access and an aesthetically pleasing approach to Fort McMurray. Such development includes the location and design of, and landscaping adjacent to, the proposed structures. Principal points of access, in this regard, include Highway 63 and the Airport Road.

Agriculture

Objectives:

1. To provide suitable public land to meet local demands for small-scale market gardening opportunities.

2. To encourage the orderly establishment of new grazing dispositions within areas having a higher capability for grazing.

3. To encourage proper management of livestock on existing grazing dispositions, to maintain forage production and to improve forage use, which may include a variety of range improvement techniques.

4. To provide suitable public land to meet local demands for horse-holding areas.

Guidelines:

1. Future market gardening will be developed only on Canada Land Inventory (CLI) Class 3 soils (Figure 3) for individual leases not exceeding 8.1 ha; a 100 m undisturbed buffer is to be maintained along the edge of the river.

   At the time of lease renewal, undeveloped portions of existing market garden leases may be withdrawn to allow opportunities for other interested market garden developers.

2. Grazing will be permitted on CLI Class 4 soils or better quality (Figure 3), subject to operating conditions on the grazing disposition (e.g., buffers, fencing, term of disposition).

3. Permanent residences will not be permitted on agricultural leases.

4. Horse-holding areas will be considered on public land with road access.

Recreation and Tourism

Objective:

1. To promote Fort McMurray and its vicinity as a service centre and staging area for recreation and tourism throughout and beyond the planning area.

Guidelines:

See Broad "Recreation and Tourism" Guidelines (Section 3.6).

Water Resources

Objectives:

1. To minimize the hazardous effects of flooding.

2. To ensure that existing and future development activities do not result in unacceptable changes in water quality and quantity.

Guidelines:

1. Operating guidelines will be applied in situations where development proposals, in proximity to Fort McMurray, may be subjected to the risk of flooding.

2. On a site-by-site basis, buffers will be established, in proximity to Fort McMurray, along the Athabasca and Clearwater river floodplains in accordance with existing requirements for specific kinds of development.

4.2 Athabasca-Clearwater Resource Management Area

Boundary Definition

The Athabasca-Clearwater Resource Management Area (RMA - Figure 2) encompasses nationally significant (i.e., Athabasca) and provincially significant (e.g., Clearwater, Ells, Firebag) rivers (Westworth 1990). The McClelland Lake wetland Complex portion of the RMA contains McClelland Lake, the fen and an adjacent upland drainage basin. The RMA includes portions of the more important tributaries, generally shown in figure 2. The boundary for the remainder of the RMA will be determined on a site-by-site basis, in accordance with specific guidelines (e.g., setbacks required by legislation), when a development is proposed.

In the surface mineable portion of the Athabasca River valley, the RMA boundary is specifically defined as follows:

i. From Twp 91 north to
   - Saline Lake on the east side of the river; and
   - where the Beaver River enters on the west side of the Athabasca River,

   the boundary of the RMA is the valley break + 100 m.

ii. North of i.
   - the boundary of the RMA is 1 km from the river's edge, or Highway #63/963, whichever is less.

Background

The Athabasca and Clearwater rivers are characterized by U-shaped valleys, owing to the sandstone bedrock of the McMurray formation. At the junction of these rivers, ice jams form during spring breakup. The upper slopes of these valleys are unstable, though not to the degree of those in the more deeply incised V-shaped valleys of their tributaries. The characteristics of these valleys reflect the geological substrata of the area, which consists primarily of shales and siltstone of the Clearwater formation. The shales contribute to slumping, as is evident along most river and stream valleys in this area.

The rivers of this RMA support a variety of fish including suckers, goldeye, walleye, lake whitefish, mountain whitefish, yellow perch, northern pike and Arctic grayling. The river valleys provide critical winter habitat for white-tailed deer and

moose. These waterways form a key component of the Athabasca watershed that extends beyond the planning area.

From an historical standpoint, the Athabasca and Clearwater rivers have played a significant role in the economic development of this area. In the Athabasca River valley, the Beaver River Quarry Archaeological Site provides the best example of a prehistoric quarry/workshop in northeastern Alberta. It has been designated as a provincial historic resource. Located in the RMA are two principal historical sites from the fur trading. Below the mouth of the MacKay River, the Pierre au Calumet Fort served the Cree Indians. It also stored provisions for the North West Company's brigades. These provisions were often obtained from the opposing companies' shipments. One of the opposing forts that had its supplies stolen was Beren's House, located on the west bank of the Athabasca River south of Fort MacKay. Both of these forts were eventually abandoned after the North West and the Hudson's Bay companies merged in 1821.

Farther down river is the Bitumount Historic Site, where the oil sands formation is exposed. This provincially designated historic resource illustrates early attempts at exploitation of the oil sands. The Bitumount complex was a pioneering project in the development and improvement of the hot water extraction process. The Abasands site, situated adjacent to Fort McMurray, is a site of similar historic importance for bitumen extraction and refining.

The hamlet of Fort MacKay has witnessed the transition of the area from a fur trade economy to today's oil sands economy. In spite of these changes, the Fort McKay Indian Band still values its hunting, fishing, trapping and renewable resource base that extends beyond the planning area. The band is presently negotiating a land exchange to relocate one of its reserves to the hamlet of Fort MacKay. Development within the Fort MacKay hamlet is presently managed by a nonstatutory community development plan administered by the Municipality of Wood Buffalo.

To facilitate exploration and potential development of oil sands east of the Athabasca River, a bridge was constructed south of Fort MacKay. Access across the river provided new recreation opportunities (e.g. canoeing on the Muskeg River) and a new starting point for a winter road to Fort Chipewyan.

An important natural feature of the RMA is the McClelland Lake wetland. It consists of a rich patterned fen containing well developed patterns of "strings" (parallel lines of vegetation) and pools. It also includes some plant species that are rare in the boreal forest and species not yet having been identified in any other site in the province. Some plant species found in the wetland are common to the Rocky Mountain foothills. The wetland and lake are not considered to be outstanding habitat for furbearers and ungulates, nor good breeding areas for waterfowl. However, relative to the planning area, the lake itself comprises the best spring/fall staging area for migrating waterfowl.

The physical features of this RMA offer great potential for a variety of recreational pursuits. Opportunities for hiking, canoeing, camping, sportfishing and viewing could be enhanced by increased access. The MacKay and Muskeg rivers have been made more accessible because of the development of resource roads. The Athabasca, Horse and Hangingstone rivers provide recreation opportunities immediately adjacent to Fort McMurray neighbourhoods. The Clearwater River also serves as an important recreation area for local residents and visitors. Through improved access and servicing (e.g., parking, trail systems, day-use sites), this resource could provide a significant alternative to Gregoire Lake as a local destination area. The river has also been identified as a possible candidate for the Canadian Heritage Rivers Program. This portion of the Clearwater is also the terminus for river travellers coming from Saskatchewan or upstream in Alberta.

Along the Athabasca River, downriver from Fort McMurray, additional site-specific recreational/ tourism opportunities could be promoted. For example, La Saline Springs is situated on a terrace that feeds Saline Lake (an old oxbow of the Athabasca River) that serves as the most productive area in the region for waterfowl. Together with numerous mineral deposits and crystal formations and a unique tufa (calcium

carbonate porous rock), these features constitute the La Saline Natural Area. Other attractions along the river include Fort MacKay, Bitumount, the two oil sand mines and structures such as the Fort MacKay bridge.

Background for the Athabasca River valley north of Twp 91

Throughout the development of the integrated resource plan, concerns about the impact of oil sands development within the Athabasca River valley have been brought to the attention of the planning team. Specifically, concerns have been raised about the potential impacts on the environment including wildlife, aesthetics, water, and traditional uses. Concurrently, concerns have also been expressed about the continuation of mining and the value of the oil sands resources within the river valley.

The ecosystems within the river valley are the most diverse and productive for wildlife and vegetation within the region. Maintaining the integrity of the river valley ensures protection of complex natural hydrological patterns and groundwater regimes. Several provincially and locally significant features (e.g., springs, wetlands) also contribute to the importance of the valley. Aboriginal people have long used the Athabasca as a travel corridor and for access to significant sites. Several very important oil sand ore bodies lie along and extend into the Athabasca River valley within the surface mineable portion of the river. Because those portions of the ore bodies nearest the valley tend to have the least overburden they are the most economic reserves of these ore bodies. Estimates based on incomplete reserve studies suggest that there are approximately 500 million cubic metres of bitumen that could be potentially recovered from the river valley and adjacent valley walls.

The Athabasca River valley contains a diversity of resources and associated values. There is a need to balance the use of natural resources and protection of the river valley ecosystem to achieve short-and long-term benefits. For these reasons, developments that propose to encroach on the river valley (within the valley breaks) will be examined closely by both government and the Alberta Energy Utilities Board regulators.

Management Intent:

To protect the natural landscape, which encompasses water, wildlife habitat, ecological and geological features, to ensure aesthetic, recreational, traditional and environmental values.

Mineral and Surface Material Resources

Objective:

1. To explore and develop mineral and surface material resources in a manner that ensures protection of and minimizes the impacts to the unstable slopes, watershed, wildlife, ecological, historical, traditional and recreational values of the RMA.

Guidelines:

1a. In the Clearwater River valley, part of the McClelland Lake Wetland Complex and the MacKay tributary adjacent to Fort MacKay, oil sands development using surface mining techniques is not permitted." Within the remaining "tributaries" of the RMA, surface mining will only be considered where the proponent clearly demonstrates that efforts are being made to apply mitigative measures and reclamation procedures that reflect the higher sensitivities of these areas.

1b. Surface mining within the Athabasca Clearwater RMA shall maintain the water table, water chemistry and water flow within limits as indicated by natural fluctuations to maintain ecosystem diversity and function of the McClelland Lake wetland complex where surface mining is not allowed.

2. Experimental and commercial oil sands recovery, using in situ techniques, may be considered on a site-by-site basis with the Athabasca and Clearwater river valleys, associated tributaries and the upland drainage basin of the McClelland Lake Wetland Complex. Recovery operations should be based on the best science utilizing best technology available to minimize environmental impacts. In situ development in the Clearwater River valley is not encouraged

because of the area's potential for future recreation development. If it does occur it should adhere to Access and Infrastructure guideline #4, in Subsection 4.2.

In situ oil sands development will not be permitted within part of the McClelland Lake wetland complex, nor in those portions of the RMA adjacent to Fort MacKay (NE 1/4, Twp. 94 and SE 1/4, Twp 95, Rge. 11, W4M: NW, Twp. 94 and SE, Twp 95, Rge. 10, W4M) and Fort McMurray (Twp. 88, Rge. 9, and Twp. 89, Rges. 9-10, W4M).

3. Seismic and other mineral exploration in the Athabasca and Clearwater river valleys and their tributaries shall maximize use of existing access or use portable equipment on hand-cut lines not exceeding a width of 1.5 m. Where this width is not sufficient to allow evaluation of the mineral resource or of geological structures, construction of new access, not exceeding a width of 3 m, will be considered at the time of application. This guideline will apply except within areas approved for logging over the subsequent five years.

   Exploration programs in the McClelland Lake wetland must not interfere with the contours of the landscape in a manner that alters the waterflow.

4. Extraction of oil sands by in situ recovery methods, surface materials (e.g., sand, gravel), metallic and quarriable minerals and the development of major transportation and utility corridors will be conducted in a manner minimizing impacts on the significant watershed, wildlife, fisheries, vegetation, aesthetic and recreation values. Operating conditions (e.g., access, site selection, site clearing, reclamation, material storage) to minimize impacts on these values will be considered on a site-by-site basis. (See also "Access and Infrastructure" guidelines 1-4).

   Instream gravel production is not permitted. Sand and gravel operations require a minimum 50 m buffer from the high-water mark of any river.

   Existing commitments to surface mining of oil sands will be honoured.

Athabasca River Valley (surface mineable area only):

5. The Athabasca River valley ecosystem and its resources and values will be protected and adverse impacts of development minimized. Exploration and development of oil sand resources will be considered only if the proponent can demonstrate that a satisfactory level of mitigation of the adverse impacts of development on the resources and values identified below can be achieved. This determination will be made during the project approval process and will not entail a plan amendment.

   Wildlife
   - valley vegetation (wind shelter, ungulate wintering areas, travel corridors)
   - riparian habitat
   - habitat diversity

   Erosion
   - sensitive soils and drainage patterns from erosion or disturbance
   - downstream users from sedimentation

   Floodplain
   - setback to at least 1:100 year flood level
   - accommodate for natural evolution in the path of the river

   Water Quality
   - water quality for downstream users including human, fish and other biota
   - natural surface water and groundwater regimes

   Recreation and Tourism
   - visual and acoustic aesthetics. Minimize impacts of developments upon river users and recreationists using the river as a travel corridor.
   - characteristic valley horizonCmaintain or restore

   Ecological
   - unique physical river valley characteristics (e.g., springs)
   - rare flora and fauna
   - critical ecological functions and processes

Traditional Uses

- important traditional areas for First Nation Peoples

Historic Sites

- historic resources for scientific, educational and interpretive purposes.

Forest Resources

Objective (Commercial Timber):

1. To minimize the effects of timber harvesting on the watershed and significant aesthetic, ecological, historical, traditional and recreational features and opportunities found in this RMA.

Guidelines:

1. The impact of timber harvesting on the watershed will be reduced through special conditions relating to cutblock size and configuration; these conditions may also include a range of harvesting techniques such as selective logging.

2. In accordance with current harvesting guidelines, timber harvesting in upland areas of the McClelland Lake wetland portion of this RMA must incorporate buffers around sinkholes as well as along creeks and the perimeter of the open fen. This harvest activity must not interfere with the contours of the landscape in a manner that alters the water flow.

3. Timber harvesting will occur in accordance with the guidelines identified in the Forest Landscape Management Strategies for Alberta for all river areas in the RMA and will be designed to minimize the impact on aesthetics as viewed from the river. Logging will not be permitted on the deeply incised (45^{0}+) slopes of the Horse, Hangingstone, Steepbank, Muskeg, Tar, Joslyn, Ells, Dover and MacKay rivers.

Settlement

Objective:

1. To ensure that commercial structures are developed to complement, rather than impose on, the natural aesthetics of the RMA.

Guidelines:

1. Commercial development will be considered only where it supports recreation and tourism objectives (see Broad "Recreation and Tourism" Guidelines, Section 3.6). Commercial shoreline development must adhere to "Water" Guidelines, Section 3.7 as outlined by Alberta Environmental Protection.

2. The sale of public land is not permitted in the RMA.

Access and Infrastructure

Objectives:

1. To accommodate transportation facilities and other industrial infrastructure required for the economic development of the region, and also provide protection for the wildlife (e.g., wintering moose), fishery, water quality, aesthetic and recreation/tourism values.

2. To maintain or enhance access to recreational opportunities in the river valleys, particularly valleys adjacent to the Fort McMurray RMA (e.g., the Clearwater, Hangingstone, Horse and Athabasca rivers).

Guidelines:

1. River crossings for major transportation and utility corridors will be constructed to be compatible with the intent of this RMA. Wherever possible, existing or planned corridor crossings should be used (e.g., Clearwater River crossing at Sec. 29, 32, Twp. 88, Rge. 7, W4M as identified in the Athabasca Oil Sands Multiple Use Corridor Study).

   All riverbank disturbances shall be mitigated through reclamation procedures and

landscaping techniques to minimize erosion and negative visual effects.

2. Linear development proposals for crossing the McClelland Lake wetland block of the RMA should use the existing corridor containing the Fort Chipewyan winter road.

3. New roads or other kinds of linear development used to service resource extraction areas (e.g., timber harvesting, surficial materials) shall consider recreation and tourism values, where possible. However, this does not apply to internal roads within a developing oil sands lease. Restrictions on the location of such internal industrial roads (e.g., distance from river) and their duration will be applied as required.

   In the upland portion of the McClelland Lake wetland block, access development should incorporate buffers around sinkholes, along creeks and around the perimeter of the open fen.

4. Resource development facilities and structures that must be located in the RMA (e.g., pumping stations, pipelines, tunnel entrances) should be screened from the river, using natural features and architecturally designed and landscaped to complement the natural surroundings.

   Most structures associated with resource development (e.g., storage and repair facilities) are not permitted in this RMA.

Agriculture

Guideline:

1. Agricultural activity is not considered compatible with the intent of this RMA.

Recreation and Tourism

See Broad "Recreation and Tourism" Objectives (Section 3.6).

Guidelines:

1. Except for recreation purposes, no surface access leading to disposition, will be permitted within 200 m of the river shoreline on lands identified for a proposed provincial recreation area within the Fort Hills (Twp. 97, Rge. 10-11, W4M).

2. Development of support services (e.g., parking and marina facilities) serving random, extensive recreation and tourism opportunities must adhere to the "Settlement" Guideline (#1), Section 4.2.

Water Resources

Objective:

See Broad "Water" Objectives (Section 3.7)

Guideline:

1. The domestic water supply needs of the urban service area of Fort McMurray, the hamlet of Fort MacKay and other existing or future settlements situated within, or downstream from, the planning area will continue to be recognized through existing review and impact evaluation processes used for such developments.

Fisheries

See Broad "Fisheries" Objectives (Section 3.8).

Guideline:

1. Special emphasis will be placed on site selection and erosion control measures of proposed developments, with the purpose of maintaining riparian habitat and shoreline vegetation, and protecting water quality, and fish-spawning and fish-rearing habitat. Creation of artificial beaches and removal of shoreline vegetation will be allowed only in confined areas and only under exceptional circumstances where it will provide significant benefits to the public at large.

Wildlife

Objectives:

1. To maintain the limited waterfowl habitat found in this RMA.

2. To maintain and enhance moose habitat to support at least 225 wintering moose, up from the current population of approximately 100.

Guidelines:

1. Developments will not be permitted on significant waterfowl nesting habitat adjacent to the following water bodies:

    - Horseshoe Lake (Parts of Sec. 3, 9, 10, Twp. 93, Rge. 10, W4M)
    - Saline Lake (Parts of Sec. 15, 21, 22, 28, Twp. 93, Rge. 10, W4M)
      McClelland Lake (Parts of SW Quadrant, Twp. 98, Rge. 8, W4M; SE Quadrant, Twp. 98, Rge. 9, W4M and NE Quadrant, Twp. 97, Rge. 9, W4M)
    - Little McClelland Lake (Parts of Sec. 17, 18, Twp. 97, Rge. 8, W4M) Wood Slough (Parts of Sec. 7, 8, Twp. 92, Rge. 9, W4M)

2. In maintaining critical wintering habitat for moose, special constraints (e.g., access control, site selection) may be applied to development proposals in the following river valleys:

    - Clearwater River
    - Hangingstone River
    - Lower Muskeg River (Sec. 32 and downstream in Twp. 94, Rge. 10, W4M)
    - Lower Steepbank River (downstream from midpoint of Twp. 92, Rge. 9, W4M)
    - Athabasca River (downstream from Fort McMurray)

Ecological Resources

See Broad "Ecological" Objectives (Section 3.10).

Guidelines:

1. Development activity permitted within or immediately adjacent to this RMA must not disturb or adversely affect La Saline Natural Area (N1/2 15 and E1/2 21, 22, Twp. 93, Rge. 10, W4M). These lands are protected under an Order in Council as a conservation Natural Area.

2. Development proposals will mitigate adverse impacts on the nationally or provincially significant* natural features identified in the following areas. The level of protection for each site will be determined through interagency review.

    Nationally Significant:

    - Athabasca River Tar Sands Reach (Twp. 95, Rge. 11, W4M)

    Provincially Significant:

    - Eymundson Sinkholes on Pierre River (Twp. 98, Rge. 11, W4M)
    - Ells River - Oxbows and diverse vegetation (Twp 95, Rge. 11 and 12 W4M).
    - Firebag River - Landform Diversity (Twp. 98, Rge. 7 W4M).
    - Clearwater River - Candidate Heritage River (Twp. 89, Rge. 9 W4M and Twp. 88, Rge. 7 and 8, W4M)

    These sites will be reviewed for their candidacy for formal designation.

Note: "Nationally and provincially" significant natural features as defined in the 1990 report, by D.A. Westworth, entitled Significant Natural Features of the Eastern Boreal Forest Region of Alberta.

Historical Resources

See Broad "Historical" Objective (Section 3.11).

Guideline:

1. Development activity permitted within or immediately adjacent to this RMA must not disturb or adversely affect the Beaver River Quarry Archaeological Site (Sec. 36, Twp. 93, Rge. 11, W4M and Sec. 1, Twp. 94, Rge. 11, W4M) and the Bitumount Historic Site (Sec. 1, Twp. 97, Rge. 11, W4M). Both of these sites have been designated as provincial historical resources.

4.3 Gregoire Lake Resource Management Area

The Gregoire Lake Resource Management Area (Figure 2) situated approximately 20 km (12 mi.) southeast of Fort McMurray, contains Gregoire Lake, the most significant local recreation destination area. Gregoire Lake supports a variety of sport fish including walleye, yellow perch, lake whitefish and northern pike. It also provides opportunities for other water-based activities besides fishing, such as boating, water-skiing, sailing and wind-surfing. The lake serves as the source of water for the hamlet of Anzac.

Gregoire Lake Provincial Park, managed by Alberta Natural Resource Service is located on the northwest shoreline of the lake. Although relatively unproductive for waterfowl, the area is inhabited by a number of wildlife species including moose, deer, beaver, muskrat, otter, mink, wolf and coyote. The park provides day and overnight use facilities including hiking trails, a beach and a campground with 140 individual campsites and a group camp. The park primarily serves the residents of Fort McMurray. The park is underutilized for camping, with the exception of summer weekends. This level of use may change when the population grows with the development of the area's oil sands deposits, and Highway 881 "circle route" is completed from Lac La Biche.

Along the south shore of the lake, extensive recreation opportunities can be found at Gregoire Lake Natural Area. It contains three creeks, including Surmont Creek that feeds the lake, extensive wet meadows, with a variety of grasses and willow shrubland and upland aspen forests.

Located adjacent to the lake are the settlement of the Fort McMurray Band on the Gregoire Lake Indian Reserve and the hamlet of Anzac. The Fort McMurray Band is currently pursuing a formal land claim. The hamlet of Anzac provides recreational and industrial services to the surrounding area (Stony-Birch RMA). Development control within the hamlet is currently managed by the Municipality of Wood Buffalo through the Anzac Area Structure Plan.

Highway 881 connects the southwestern portion of the RMA and Anzac with Fort McMurray. Once the road to Lac La Biche is upgraded, the lake may also serve other communities outside the planning area such as Conklin and Janvier. The northeastern shoreline between Gregoire Lake Provincial Park and Anzac remains largely inaccessible. That shoreline is also the only portion of the RMA where expansion of recreation opportunities is anticipated. The Gregoire Lake Area Structure Plan, recently adopted, provides detailed development control on lands immediately surrounding Gregoire Lake.

Management Intent:

To optimize use of the lands for both intensive and extensive recreation, while maintaining the aesthetic characteristics of the lake and its shoreland.

Mineral and Surface Material Resources

Objective:

1. To provide opportunities for limited petroleum, natural gas and in situ oil sands exploration, while recognizing the priority of recreation, water resources and environmental values.

Guidelines:

1. Geophysical exploration may be permitted on the surface of Gregoire Lake and adjacent public land in the RMA, provided

nondestructive techniques (air guns from boats, 1.5 m handcut lines, use of existing access) are used. Proponents must ensure their operations do not negatively affect the recreational and water resource values of the lake and surrounding lands. Public consultation is recommended before exploration is approved.

2. No surface mining or quarrying will be permitted in this RMA.

3. No major facilities will be permitted in the RMA.

4. A 400 m, buffer shall be provided from the high-water mark of Gregoire Lake for wellsites and associated infrastructure.

5. Wellsites and infrastructure shall be designed, constructed and operated so that they will not negatively affect the values (e.g., sight, smell, sound) of the recreational buffer around the lake. Wellsites will be cleared in an irregular shape and the right-of-way, line-of-sight will be limited to 200 m.

Forest Resources (Commercial Timber)

Objective:

1. To limit the effects of commercial timber development in keeping with the recreational opportunities available in this RMA.

Guideline:

1. Timber harvesting shall be undertaken only as a salvage operation, as specified under Broad "Commercial Timber" Guideline #2 in Section #3.2.

Settlement

Objective:

1. To minimize the effects of land development in keeping with the recreational opportunities found in this RMA.

Guidelines:

1. Should the hamlet of Anzac require additional land, they should be acquired from the Stony Birch RMA. This source will ensure that direct impact on the recreation opportunities of the Gregoire Lake RMA can be minimized.

2. Commercial development will be permitted in the RMA provided that it is ancillary to the development of recreation and tourism opportunities. In addition to meeting "Settlement" guideline #4, Section 3.3, public access shall be maintained both to and along the shoreline, but it should still meet the concerns of affected government agencies (e.g., Natural Resource Service, Alberta Environmental Protection).

3. Industrial development is not considered compatible with the intent of this RMA. Such activities will be directed to nearby settlements such as the hamlet of Anzac.

Access and Infrastructure

See Broad "Access" Objectives (Section 3.4).

Guidelines:

1. Except for direct water access, additional roads or other kinds of linear development will not be permitted within 100 m of the established high-water mark of the lake, and will have a line-of-site limited to 200 m.

2. Public access shall be maintained to all public shorelines.

Agriculture

Guideline:

1. Agricultural activity is not allowed within this RMA.

Recreation and Tourism

Objectives:

1. To provide a range of recreation and tourism opportunities focusing on Gregoire Lake.

2. To encourage the provision of facilities and services that are required to meet the demand for recreation-based tourism.

Guideline:

See Broad "Recreation and Tourism" Guidelines # 1 and #2, Section 3.6.

Fisheries

See Broad "Fisheries" Objectives (Section 3.8).

Guideline:

1. Special emphasis will be placed on the protection of riparian habitats for erosion control, maintenance of water quality, fish spawning and fur rearing. Creation of artificial beaches and removal of shoreline vegetation is strongly discouraged.

Ecological Resources

See Broad "Ecological" Objectives (Section 3.10).

Guideline:

1. Development permitted within this RMA must not disturb or adversely affect the Gregoire Lake Natural Area (LSDs 1, 2 and pt. 8 of 10, NW 11, Twp. 86, Rge. 8, W4M). These lands are currently under a Protective Notation - Recreation.

4.4 Mildred-Kearl Lakes Resource Management Area

The entire Mildred-Kearl RMA is underlain by surface mineable oil sands deposits. In-place reserves of crude bitumen are estimated to be 74 billion barrels. These reserves could potentially yield an estimated 22 billion barrels of synthetic crude oil. Recently, total cumulative synthetic crude oil production from Syncrude Canada and Suncor Incorporated, combined, reached a milestone of 1 billion barrels.

Synthetic crude oil production from surface mineable oil sands accounts for the largest proportion of Alberta's synthetic crude oil production. Of the 380 000 barrels/day of bitumen produced in Alberta, 71 percent (270 000 barrels/day) comes from the Syncrude and Suncor mining operations. Although the amount of bitumen recovered by in situ methods is increasing (from the deeper oil sands deposits outside of the RMA), surface mining will be the primary recovery method in this RMA for the foreseeable future.

The impacts of open-pit mining on the natural landscape in this RMA are considerable, as is evident from the existing Syncrude and Suncor operations. Reclamation is of major importance because it returns the land to a level of capability equivalent to its previous state (e.g., reforestation for timber, wildlife habitat and recreational purposes). Although reforestation will continue to be important, there may be an increasing demand to accommodate other activities on these lands (e.g., fur farming, tree farming) to serve the growing population of Fort McMurray.

The Fort McKay Indian Band has expressed concern about the effects of existing and potential development activity on "traditional lands," which make up much of this RMA and beyond. These lands are vital to their traditional activities, such as trapping, hunting and fishing. The RMA is also situated within a portion of the Alberta-Pacific Forest Management Agreement area. Timber resources here are expected to sustain some of the supply requirements for the company's pulp mill, currently under construction near the town of Athabasca.

Over the long term, infrastructure to support resource extraction/refining processes and the demands of an expanding population will be required. Currently, the RMA is served by Highway 63, four airstrips (Bitumount, Kearl Lake, Mildred Lake and Canterra site) and industrial roads.

A number of specific sites within the RMA warrant some degree of protection or mitigation from the effects of development. The most notable of these is the upland area at Fort Hills that Alberta Parks considers to be suitable for a provincial park (Twp. 97, Rges. 10-11, W4M). This area, the adjacent McClelland Lake wetland and the Bitumount Historic Site provide significant

opportunities for heritage appreciation as well as recreation and tourism. Another significant location, from an historical perspective, is the Bezya Site, situated in the boreal-muskeg ecozone of the former Alsands lease. This site is approximately 4000 years old and contains the remains of a stone-working technology, with parallels in the Northwest Territories, Yukon and Alaska.

Management Intent:

To promote the orderly planning, exploration and development of resources with emphasis on the area's oil sands reserves.

Mineral and Surface Material Resources

Objectives:

1. To provide opportunities for industry to further delineate the extent of surface mineable oil sands reserves.

2. To encourage the orderly, efficient development and production of surface mineable oil sands reserves, to optimize regional and provincial economic and employment benefits.

3. To encourage and provide opportunities for the exploration and development of quarriable metallic and industrial, aggregate and other mineral resources, providing such developments are compatible with, or will not jeopardize, existing or future oil sands development projects.

4. To encourage the recovery of other valuable mineral, aggregate and surface material resources during the mining and processing of oil sands

Guidelines:

1. Mineral exploration activities, including drill hole programs will be permitted, subject to site-specific operating conditions.

2. The review of mineral development proposals, other than oil sands, will consider the compatibility of development proposals with existing and possible future oil sands surface mining developments.

Forest Resources

Objective (Commercial Timber):

See Broad "Forest" Objectives (Section 3.2).

Guidelines (Commercial Timber):

1. Where loss of the forest land base occurs through surface mining, reforestation may be undertaken at locations identified during the development and reclamation stages.

Settlement

Objective:

1. To ensure that development along provincial highways does not adversely affect opportunities for roadside recreation and tourism attractions.

Guidelines:

1. Highway commercial or secondary industrial development proposals must include input from the Alberta Energy Utilities Board to determine the potential impact on oil sands recovery, and must adhere to the "Recreation and Tourism" guideline provided in Section 4.4.

2. Pending further assessment by Alberta Environmental Protection and the Municipality of Wood Buffalo, highway-oriented development will be considered at the following locations:

   - commercial development within a reservation established at Sec. 1, Twp. 94, Rge. 11, W4M; and

   - commercial or secondary industrial development, on the east side of the Athabasca River, along Highway 63 north to and including Sec. 1, Twp. 94, Rge. 10, W4M.

Access and Infrastructure

See Broad "Access" Objectives (Section 3.4).

Guidelines:

1. Proponents of oil sands developments on the east side of the Athabasca River, which require pipeline connections to the south, are encouraged to use the Athabasca Oil Sands Multiple Use Corridor proposed by Alberta Environmental Protection.

2. Surface access leading to disposition, on lands reserved for a proposed provincial recreation area at Fort Hills (located within Twp. 97, Rge. 10-11, W4M), will be permitted under conditions aimed at maintaining the recreation potential, as specified by Alberta Parks.

Agriculture

Objectives:

See Broad "Agriculture" Objective (Section 3.5).

Guideline:

1. The merits of agricultural development on reclaimed lands, or on other suitable sites, will be considered on a site-specific basis.

Recreation and Tourism

Objectives:

1. To promote opportunities for recreation and tourism activities (e.g., services, facilities and interpretation) along provincial highways.

2. To maintain the recreation potential of the Fort Hills (located within Twp. 97, Rge. 10-11, W4M).

Guideline:

1. Alberta Economic Development and Tourism, will be included in the referral system for any proposals that may adversely affect potential roadside recreation and tourism opportunities. Such opportunities may include river or stream crossings, significant wildlife habitats and viewing areas of special interest (e.g., scenery, historic sites, wildlife viewing).

2. This referral system will also be applied to any proposed developments that might adversely affect the Fort Hills future potential as a provincial recreation area. Alberta Parks will maintain the protective notation until such time as recreation use warrants proceeding with park establishment.

Wildlife

Objectives:

1. To maintain moose habitat and to rebuild the wintering moose population to at least 430 animals from the present population of approximately 360.

2. To maintain, or to replace at another site(s), the waterfowl and fisheries habitat of Kearl Lake.

Guidelines:

1. Where development activities have a negative impact on important moose habitat (Appendix 4), off-site habitat enhancement, or special on-site protective measures (particularly those concerning harassment), may be required.

2. For lakes in this RMA (e.g., Kearl, CalumetC Sec. 17,18, Twp. 97, Rge. 11, W5M), a backshore buffer shall be maintained to protect waterfowl nesting, staging areas and fish spawning sites. If, however, a lake must be mined, a plan is required that will result in full replacement of the fish-spawning habitat and strive to replace waterfowl habitat. A flexible approach will be used for the timing and location of habitat mitigation programs so that off-site and post-disturbance habitat replacement options can be considered.

Ecological Resources

See Broad "Ecological" Objectives (Section 3.10).

Guideline:

1. Any activity adjacent to La Saline Natural Area (N 1/2 of 15, E 1/2 of 21 and 22, Twp. 93, Rge. 10, W4M) must not disturb or adversely affect this provincial ecological resource.

Historical Resources

See Broad "Historical" Objective (Section 3.11).

Landscape Reclamation Strategy

The reclamation of land disturbed by regulated industrial activities initiated after September 1, 1993, is governed by the Environmental Protection and Enhancement Act and associated regulations. Large industrial operations must obtain approval of their development and reclamation plans before commencement of the operation. Applications for such approval requires detailed planning to show how reclamation will be achieved. The application is subject to review by the Interdepartmental Development and Reclamation Review Committee, coordinated by Alberta Environmental Protection.

Currently, disturbed lands must be reclaimed to a state that will allow sustained levels of use equivalent to that which existed before development. Public land within the Green Area is typically reclaimed to a condition that will produce forest growth similar to that which existed before development. In an effort toward achieving economic diversification, the potential exists to explore alternative reclamation approaches, particularly for those lands where oil sands extraction has occurred.

The reclamation strategy developed for Mildred-Kearl Lakes Resource Management Area provides a way to prepare and possibly amend reclamation plans and approvals as they are required. This strategy focuses on identifying future land uses that may be considered during the more detailed reclamation planning process.

Objectives:

1. To develop a reclaimed land base of capability equivalent to a boreal forest environment and that will support a range of activities, including timber harvesting, wildlife and fisheries habitat, extensive recreation and traditional Aboriginal uses.

2. To develop a reclaimed land base that will encourage and support a diversity of wildlife species (e.g., waterfowl, shorebirds, furbearers, ungulates and others).

Guidelines:

1. Disturbed forested lands shall be reclaimed to a level of capability equivalent to that which existed before disturbance. Where commercial forest is the reclamation objective, the capability will be measured in terms of meeting reforestation standards.

2. Commercial timber harvesting potential will normally be replaced on a project basis.

3. Following surface disturbance, the land should be reclaimed in a manner that re-establishes a watershed that resembles and functions as a natural system. The restructured soil profile shall be capable of supporting a variety of native vegetation.

4. Revegetation to a mixedwood boreal forest, using native species, will be the primary means by which the land base is reclaimed. The reclaimed land base will be capable of supporting a variety of uses, including timber harvesting, extensive recreation, traditional native activities, wildlife habitat (including fisheries and waterfowl) and watersheds.

   Reclamation shall:

   (a) ensure that areas reforested for commercial timber harvesting are situated on lands that will maintain this capacity on a sustainable basis;

   (b) recognize the importance of the river valleys in the Athabasca-Clearwater

RMA and re-establish ecosystem connections between reclaimed areas and the river valleys;

(c) use a wide variety of native tree species and understory vegetation; leave small openings throughout revegetated areas; and

(d) encourage the development of permanent ponds, sloughs and small lakes, with and without connecting streams and with and without the ascent meadows.

5. Future uses of reclaimed land, should also be compatible with existing and planned uses for adjacent lands.

(a) The final alignment for any permanent road constructed through reclaimed land should attempt to link existing and planned resource/land use development opportunities and also take advantage of opportunities such as scenic views of lakes/wetlands, river valleys and upland areas. Reclamation activity adjacent to permanent roads should also consider maintenance or enhancement of wildlife habitat and scenic values.

(b) Alternative land uses such as agriculture (e.g., market gardening, wild rice, tree farming), commercial recreation (e.g., golf courses, OHV parks) and secondary industry (e.g., sawmill, cement plant) may be considered, provided that suitable access to provincial highways, local markets and suitable soil conditions are evident. In addition, other related concerns identified by the Development and Reclamation Review Committee (coordinated by Alberta Environmental Protection) and the Municipality of Wood Buffalo should have been addressed.

(c) Areas within approximately 1.5 km of a permanent road, may be reclaimed to a variety of landforms to accommodate a range of potential alternative land uses.

During reclamation planning, landform provisions should be made to consider the following land use activities:

Agriculture:

To accommodate potential agricultural activities (e.g., grazing, bison ranching, wild rice, berry production), varied soil and drainage conditions should be considered.

Commercial Recreation:

To accommodate commercial recreation activities, flat, well-drained sites near infrastructure should be considered. Some activities may require sites in proximity to populated areas and/or natural or man-made attractions (e.g., lakes, river valleys, and wildlife-viewing, historic or interpretive sites).

Secondary Industry:

To accommodate secondary industry development, flat, well-drained sites near infrastructure and population centres should be considered. Although the planning of industrial sites may vary according to the type of activity, a visual screen should be put in place between the industrial site and the highway.

Country Residential:

To accommodate country residential development, residential sites should be considered on areas with rolling topography and panoramic views within a treed landscape that avoids high-water tables, and that are buffeted from adjacent adverse conditions (e.g., highway noise, and resource extraction).

6. Developers of larger projects should continue to contribute to research and development in land reclamation technology, that will reduce disturbances and protect the environment. Such contributions may either be on an

individual or a shared basis (e.g., Alberta Oil Sands Technology and Research Authority, Reclamation Research Technical Advisory Committee).

4.5 Stony-Birch Resource Management Area

This RMA is situated predominantly in the southern portion of the planning area (Figure 2), and it contains the highest elevations in the planning area, notably the Stony Mountain Upland and Birch Mountain. Road access in the RMA is provided by Highways 63, 69, 881, the Fort Chipewyan winter road, resource roads and the service roads to the lookout towers at Thickwood Hills and the Stony Mountain.

The Stony-Birch RMA contains many of the same boreal forest characteristics found elsewhere in this planning area. It differs from the Mildred-Kearl Lakes RMA in that the oil sands deposits are deep and require in situ extraction techniques. Consequently, large-scale reclamation activity is not anticipated because extensive surface areas will not be disturbed. Development activity is expected to focus on a variety of resources including coniferous and deciduous timber, natural gas and in situ oil sand production.

There are some important locations to be recognized for their current and future recreational value. In the remote northwest corner of the planning area, Birch Mountain provides opportunities for wilderness recreation experiences. The more accessible Stony Mountain Uplands in the south contain recreation facilities at Maqua Lake and have been identified as a suitable location for a trail system. The significant change in topography of the uplands also provides scenic views of surrounding countryside. Similarly, the Thickwood Hills area, west of Fort McMurray, provides additional opportunities for extensive recreation. Development planning should consider the potential impact on these features as well as on Surmont Creek, the principal source of water for Gregoire Lake.

Management Intent:

To manage the exploration, extraction and/or development of a range of resources while recognizing opportunities associated with the wildlife, fisheries and other ecological values in the RMA.

Mineral Resources and Surface Materials

Objectives:

1. To maintain opportunities for mineral resource exploration and encourage development in a manner that minimizes conflict with other resources and land uses in the RMA.

2. To encourage the development of in situ oil sands recovery and the production of bitumen from deeper oil sands formations in the RMA.

Guideline:

1. If mineral resource activity is proposed in the Thickwood Hills, Birch Mountain and Stony Mountain Upland areas, the development proposal, including site selection, should be designed to minimize the impacts on wildland recreational resources.

Forest Resources

Objectives (Commercial Timber):

1. To enhance timber production through the use of drainage and other intensive forest management practices, while maintaining watershed protection.

2. To harvest timber resources in a manner that ensures the aesthetic qualities and recreational opportunities on the Stony Mountain Upland can be maintained.

Guidelines (Commercial Timber):

1. Alberta Land and Forest Service will continue to select and manage sites for improved wood quality and timber productivity, with consideration for watershed integrity. If timber harvesting activities are proposed in the

Thickwood Hills, Birch Mountain and Stony Mountain upland areas, the development proposal, including site selection, should be designed to minimize the impacts on wildland recreational resources.

2. On the Stony Mountain Upland, timber harvesting on the west- and northwest-facing slopes (Twp. 85, Rge. 9) will occur using landscape logging techniques as defined in the Forest Landscape Management Strategies for Alberta (Alberta 1990) and the principles contained in the Timber Harvest Cutblock Design (Alberta 1981). Timber harvesting shall not be permitted within 30 m of the recreation area at Maqua Lake on the Stony Mountain Upland.

Settlement

Objective:

See Broad "Settlement" Objective (Section 3.3).

Guidelines:

1. Subject to the availability of adequate infrastructure (including sewage disposal facilities), country residential development (including seasonal cottages) will be considered only after the existing subdivision at Saprae Creek is developed as prescribed in Section 3.3, Broad "Settlement" Guideline #2. Preferred locations where the merits of such a development may be considered are:
   - north of Anzac (E 1/2 Sec. 19, W 1/2 Sec. 30, Twp. 86, Rge. 7, W4M);
   - the Thickwood Hills area (west of Fort McMurray); and,
   - the Stony Mountain Uplands (overlooking Gregoire Lake).
2. Commercial and secondary industrial development will adhere to the "Recreation and Tourism" guideline (#2) in this section.
3. Commercial development proposals will be considered only in the vicinity of the junction of Highways 63 and 881 (NW 1/4 Sec. 1 and NW 1/4 Sec. 2, Twp. 87, Rge. 9, W4M).

Access and Infrastructure

Objectives:

1. To maintain or improve existing access to recreation and tourism opportunities.
2. To ensure that new access also serves recreation and tourism opportunities.

Guidelines:

1. With any resource development, steps should be taken, during the referral process, to ensure that access to recreation opportunities are maintained.
2. In the Thickwood Hills, Birch Mountain or the Stony Mountain Uplands, route selections must avoid or minimize impacts on wildland recreational resources.

Agriculture

Objectives:

See Broad " Agriculture" Objective (Section 3.5).

Guideline:

1. The merits of agricultural activity will be considered on a site-specific basis.

Recreation and Tourism

Objectives:

1. To ensure the recreation and tourism potential is not adversely affected by other types of development in the Thickwood Hills or the Birch Mountain and Stony Mountain Uplands.
2. To ensure that the type and location of commercial and industrial development will not limit, preclude or otherwise adversely affect roadside recreational or tourism opportunities.

Guidelines:

1. Potential impact from increased access or resource development in the Thickwood Hills,

or the Birch Mountain and Stony Mountain Uplands will be addressed by the following guidelines in this section:

- Mineral Resources Guideline #1;
- Forest Resources Guideline #2; and
- Access Guidelines #1 and #2.

2. Alberta Economic Development and Tourism will be included in the referral process for any proposals that may adversely effect potential roadside recreation or tourism opportunities. Such opportunities may include river or stream crossings, significant wildlife habitats and viewing areas of special interest.

Water Resources

See Broad "Water" Objectives (Section 3.7).

Guideline:

1. Special protective measures to preserve water quality in Surmont Creek (the primary source of water for Gregoire Lake) will be applied to any development activities located in the creek's watershed.

Wildlife

Objectives:

1. To maintain the limited number of waterfowl found in this RMA.

2. To maintain the moose habitat and to rebuild the wintering moose population to at least 575, from the present population of approximately 280 moose.

3. To maintain habitat that will continue to support the transient caribou that wander into the area from important caribou range nearby.

Guidelines:

1. Developments will not be allowed on or adjacent to Anzac Lake (Sec. 15, LSDs 1,2,3,4, of Sec. 22, Twp. 86, Rge. 7, W4M), which serves as important waterfowl habitat, unless it can be demonstrated that the development will not adversely affect the value of the area to waterfowl.

2. Special protective measures, including access control and mid-to-late winter timing constraints on all industrial activity, will be required to maintain the moose population and the integrity of the high-and medium-quality moose habitat that occupies the following sites (Appendix 4):

   - lands 4.0 km (2.5 mi.) north of, and 2.4 km (1.5 mi.) south of the Christina and Clearwater rivers;
   - Twp. 85, Rges. 7-9, and west 1/2 of Twp. 86, Rge. 9, W4M;
   - Twps. 85-87, west of the Hangingstone River; and
   - south 2/3 of Twp. 89, Rge. 10 and the lands between Horse and Athabasca rivers.

5.0 PLAN MANAGEMENT

5.1 Recommended Implementation Tasks and Strategies

This section provides agencies responsible for administering various components of the plan with recommendations on achieving the objectives identified in the plan. These recommendations are based on information or policy deficiencies identified during the planning process. The tasks identified below should be given consideration, particularly when annual reviews of budgets and priorities by participating management agencies are underway.

1. Alberta Environmental Protection, in conjunction with the Municipality of Wood Buffalo, should identify potentially feasible locations in the Stony-Birch RMA where country residential development could be accommodated. Some possible locations are in the Anzac-Gregoire Lake vicinity (E 1/2 Sec. 19, W 1/2 sec. 30, Twp. 86, Rge. 7, W4M), the Thickwood Hills area and possibly portions of Stony Mountain. Detailed site-planning (e.g., plan of subdivision) could occur later, if warranted by sufficient demand.

2. Alberta Environmental Protection, in conjunction with the Municipality of Wood Buffalo, should further evaluate the "commercial/industrial" site under reservation at Sec. 1, Twp. 94, Rge. 11, W4M and prepare a site plan to ensure efficient implementation, if the site is to be developed.

3. Alberta Land and Forest Service should place the original Northeast Energy Corridor (North Segment), and the more recently endorsed Athabasca Oil Sands Multiple Use Corridor, under a common protective notation. The reservation should focus upon the corridor, from Twp. 88 to Twp. 95, in the Athabasca-Clearwater, Mildred-Kearl Lakes and Stony-Birch RMAs.

4. Government agencies responsible for various aspects of recreation management should attempt to clarify and coordinate their roles and responsibilities before a number of studies are undertaken. These studies include the following:

   - establishing a planning strategy for river valley development that considers local demand for extensive recreation. The study should assess locations for river access and appropriate facilities such as marinas, campgrounds, boat launches, parking and a system of trails (hiking, equestrian, biking, etc.). A prime candidate area in which to initiate such a strategy is a portion of the Clearwater River valley (Athabasca-Clearwater RMA) adjacent to the city of Fort McMurray.

   - identifying present and future demands on Gregoire Lake within the Gregoire Lake RMA; and

   - identifying potential roadside recreation and tourism opportunities, particularly along existing or planned provincial highways in the Mildred-Kearl Lakes and Stony-Birch RMAs.

5. Existing development and reclamation plans in the Mildred-Kearl Lakes RMA should be reviewed to ensure that Reclamation Strategy-Section 4.4 has been taken into consideration.

6. Alberta Environmental Protection and other affected agencies should, in the context of the vision outlined in the Special Places 2000: Managing Alberta's Natural Heritage document, review the boundaries for the "Fort Hills" Crown Reservation (Twp. 97, Rge. 10-11, W4M).

7. The Alberta Government should conduct an interagency review of "nationally or provincially" significant natural features that have been identified (Westworth 1990) within the following areas:

   Nationally Significant:

   - Athabasca River Tar Sands Reach (Twp. 95, Rge. 11, W4M)

   Provincially Significant:

   - McClelland Lake Patterned Fen (Twp. 97, Rge. 9, W4M, and Twp. 98, Rge. 9, W4M) See Appendix 5
   - Eymundson Sinkholes on Pierre River (Twp. 98, Rge. 11, W4M)
   - Ells River - Oxbows and diverse vegetation (Twp 95, Rge. 11 and 12 W4M).
   - Firebag River - Landform Diversity (Twp. 98, Rge. 7 W4M).
   - Clearwater River - Candidate Heritage River (Twp. 89, Rge. 9 W4M and Twp. 88, Rge. 7 and 8, W4M)

8. Alberta Environmental Protection, in conjunction with the Fort MacKay Interface Committee [consisting of the Fort McKay Indian Band, industry and other government agencies] should consider undertaking a traditional land use study on new areas being affected by industrial activity. For those areas already disturbed, but not yet reclaimed, land use options (e.g., berry patches, bison ranching) should be considered on a site-specific basis in accordance with the Landscape Reclamation guidelines in the Mildred-Kearl Lakes RMA.

5.2 Administering the Plan

General administrative procedures and mechanisms required for plan implementation, monitoring and amendment are outlined in this section.

General Administration

The Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan will be implemented within the terms of the appropriate legislation, regular programs and activities of the government, including operational plans, specific development projects and referral processes. Direction specific to the resource management areas will assist in assessing applications for land use activities on public land. Existing systems for referral and interdepartmental review will apply to the plan. Resources will continue to be administered by the departments responsible, in line with the provisions of the plan including resource management guidelines and any subsequent operational plans.

Government agencies participating in the Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan have several responsibilities for ensuring the effective delivery of this plan. It will be their responsibility to deal with conflicts or concerns with respect to implementation or interpretation of any of the plan's provisions. These responsibilities are outlined by subject area below:

Referral Systems:

Participating government agencies will ensure that the existing referral systems of the Alberta government are adequate to encompass all affected or concerned agencies.

Plan Monitoring:

The Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan will be reviewed annually by the Northeast Boreal Environmental Resource Committee with the following purposes:

- to assess the relevancy of the stated resource objectives in light of changing conditions;
- to assess the resource management guidelines and referral procedures;
- to assess agency operational plans to ensure their consistency with the Fort McMurray-Athabasca Oil Sands resource management area intents, objectives and guidelines; and
- to recommend amendments to the Fort McMurray-Athabasca Oil Sands IRP and future actions required to maintain or promote government resource management activities in the planning area.

An annual report will be prepared by the Northeast Boreal Environmental Resource Committee. The report will highlight the previous year's activities in the planning area. It will also indicate what accomplishments are anticipated in the planning area during the following year. The report may be deferred if there is a lack of activity or progress on government resource management objectives in the planning area.

On a periodic basis (approximately every five years), an overall assessment of this integrated resource plan will be conducted by the Northeast Boreal Environmental Resource Committee. The five-year assessment is a comprehensive review to determine whether the plan requires changes and to determine the extent of changes required to update the plan. If the plan is no longer found to be current, a major plan review will occur.

A major plan review will be initiated by the Northeast Boreal Environmental Resource Committee when the plan becomes outdated because of significant changes and new priorities. A major plan review would include the following:

- a comprehensive assessment of all aspects of the plan, including, but not limited to, resource management objectives and guidelines, resource management area boundaries and intents;
- a public review on the same basis as the public involvement program for development of new integrated resource plans; and

- a statement recommending amendments to the plan and future actions required to maintain or promote government resource management activities in the planning area.

Amendment Procedures:

Changes to the planning area boundary, intents, the broad resource management objectives and guidelines, and the resource management area boundaries and intents that would result in significant changes to the allowed resource uses or priorities will require major amendment to the Fort McMurray-Athabasca Oil Sands Integrated Resource Plan. An amendment to the plan may be required as a result of an annual report, five-year assessment, a major plan review, government request or a request from an individual, group or organization outside the government.

Proposed amendments to the Fort McMurray-Athabasca Oil Sands Integrated Resource Plan from outside the government should be made by formal application. Plan amendment guidelines for integrated resource plans are available upon request. Completed applications can be directed to the Northeast Boreal Environmental Resource Committee.

Opportunities for public review of proposed amendments to the Fort McMurray-Athabasca Oil Sands Integrated Resource Plan will be provided before changes are approved by the government. A decision on requests to amend an integrated resource plan will be endorsed by the Minister of Alberta Environmental Protection or his designate. Amendments that entail a major policy decision or a change to the basic intent of the plan may be forwarded by the Minister of Environmental Protection to Cabinet Committee for approval.

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GLOSSARY

Agricultural Development: Includes improved grazing, forage or crop production, and market gardening.

Airport Vicinity Protection Area: An area surrounding an airport in which the use and development of land is controlled by regulation under the Municipal Government Act.

Annual Allowable Cut (Access): The total volume of timber that may be harvested in one year based under sustained-yield management.

Archaeological Resource: "... a work of man that (i) is primarily of value for its prehistoric, cultural or scientific significance, and (ii) is or was buried or partially buried in land in Alberta or submerged beneath the surface of any watercourse or permanent body of water in Alberta." As recognized by Alberta Community Development.

Buffer: A strip of vegetated land adjacent to watercourses, mineral licks or other important features, that is maintained or managed to provide visual screening or hiding cover for wildlife and/or watershed protection.

Camping:

Auto accessible refers to a formally designated camping facility that is accessible to normal vehicles from designated highways or improved roads.

Primitive: refers to an undesignated camping facility that is accessible only by nonmotorized means.

Random: refers to an undesignated area, used for camping, that is accessible by any means.

Commercial Development:

Recreational development refers to all activities and infrastructure associated with the development of facilities for use by the general public, including fixed-roof recreation accommodations such as hunting, fishing, skiing and backcountry lodges; hotels, motels, apartments, townhouses and cottages; and commercial recreational activities involving facilities such as ski hills and golf courses owned and/or operated by either the private or public sector.

Highway commercial development refers to those uses that are located adjacent to major highways and meet the needs of the travelling public. Examples include service stations, roadside restaurants, motels, trailer parks and campgrounds.

Consumptive Use: Activities that directly deplete the resource - e.g., hunting, logging and mining.

Corridor: A continuous strip of land connecting two geographically separate points and containing two or more facilities for the conveyance of people, energy, information or materials. Such a definition covers railways, highways, pipelines, communication and transmission facilities.

Country Residential: Rural, non-farm development (including seasonal cottaging) that takes place, on small land holdings near settlement areas as part of an Area Structure Plan (ASP).

Critical Habitat: The locality, site and particular type of local environment that is crucial to the size, distribution or stability of a wildlife or fish population. Loss of such habitat would result in a drastic decline or elimination of a population.

Crude Bitumen: A naturally occurring viscous mixture of hydrocarbons that, in its naturally occurring state, is not recoverable at a commercial rate through a well.

Disposition: Any conveyance, assurance, sale lease, licence, permit, contract or agreement made, entered into, or issued, pursuant to the Public Lands Act (RSA, 1980).

Ecological Resources: Areas managed by specific programs of the Alberta government, including the Ecological Reserves and Natural Areas programs. In the general sense, ecological resources and associated ecological processes not addressed in these program areas are covered wherever appropriate throughout this document.

Environmental Impact Assessment: The preparation of a report by the proponent of an activity as part of the approval requirements under the Environmental Protection and Enhancement Act.

Environmental Resource Committee: A committee of regional directors representing each of the services of Alberta Environmental Protection and other agency representatives. This committee reviews planning documents, pertaining to the Northeast Region and has the primary responsibility for implementing approved plans.

Fen: Peatland comprising neutral to acidic accumulations of organic material, mainly derived from sedges. A mineral-rich water table persists very near the surface.

Forest Land Base: Land considered to be capable of contributing to the social and economic welfare of the province if it is predominantly maintained under forest management.

Forest Management Agreement (FMA): An agreement between the Province of Alberta and a timber company granting authority to the company to manage and harvest timber. The FMAs are usually contingent on the company agreeing to construct a large wood-processing facility, and agreeing to manage the FMA by sound forest management principles approved by the Alberta Land and Forest Service. The FMAs are awarded by Cabinet.

Forest Management Unit (FMU): An area of forested land located in the Green Area of the province, to be managed for sustained timber yield. Forest Management Units are established by the Minister of Environmental Protection.

Grazing Permit: A short-term disposition that expires December 31 following the date of issue, although it may be renewed several times. Permits are usually issued for land where other types of uses are not well established. Grazing is allowed until such time as more permanent land-use decisions are made. Grazing permits confer exclusive grazing rights in the permit area.

Highway commercial development: See Commercial Development

Historic Resource: Any work of nature or of man that is primarily of value for its palaeotological, archaeological, prehistoric, historic, cultural, natural, scientific or aesthetic interest. As defined by Alberta Community Development.

Historic Site: "... any site which includes or is comprised of an historical resource of immovable nature or which cannot be disassociated from its content without destroying some or all of its value as a historical resource and includes a prehistoric, historic or natural site or structure," as recognized by Alberta Community Development.

Historical Resource Impact Assessment: Projects normally conducted when development programs are anticipated to cause ground surface disturbance within the province of Alberta. The objectives of such projects are to locate all historical resource sites to be affected by the development, evaluate the worth of such sites relative to Alberta's historical resources as a whole, determine the nature of the impact of the development on individual sites, and propose conservation procedures for those sites likely to be affected by the development. As defined by Alberta Community Development.

Hunting: The stalking of any wild animal for recreational and management purposes as a source of food.

Improved Grazing: Grazing lands that have had productivity enhanced by clearing and establishing tame forage species and/or various range maintenance projects; such as brush regrowth control, crossfencing, drainage, etc.

Industrial Development: All activities and infrastructure associated with the development of an industrial base to accommodate and service the extraction, removal and processing of nonrenewable resources.

In Situ Recovery: Refers to methods of extracting the fuel component of an oil sand deposit without removing the deposit from its bed.

Intensive Forest Management: Management of the forest resource to obtain a high level of timber volume per unit area through the application of silviculture and forest management techniques.

Landscape Logging:

(a) Identifying and rating the visual importance of present and potential timber harvesting operations.

(b) Ensuring that timber harvesting operations blend with the natural landscape in areas where there is a concern for visual quality.

Logging: All activities associated with the mechanical removal and transport of timber for manufacture into forest products.

Market Gardening: The growing of vegetables or fruit for commercial purposes.

Natural Areas: A Natural Area is one type of legislatively protected area in Alberta, set aside by Alberta Environmental Protection under the authority of the Wilderness, Ecological Reserves and Natural Areas Act. Natural Areas have, as their primary objective, the maintenance of their natural features while allowing for appropriate public use.

Off-Highway Vehicle (OHV): Motorized vehicle used for cross-country travel on land, water or snow. This category includes four-wheel-drive vehicles, motorcycles, track vehicles and snow vehicles. Off-highway vehicles do not include helicopters, motorboats, airplanes or mountain bikes (Off-Highway Vehicle Act 1980, c. 0-4).

Oil Sands: Sand and other rock material containing crude bitumen; the crude bitumen contained in those sands and other rock materials; and any other material substances other than natural gas, in association with that crude bitumen or those sands and other rock materials.

Paleontological Resource: "... a work of nature consisting of or containing evidence of extinct multicellular beings and includes those works or classes of works of nature designated by the regulations as paleontological resources." As defined by Alberta Community Development.

Preliminary Disclosure: A means by which both the private and public sectors may make major development proposals, on a confidential basis, to government.

Public Land: Land which is under the administration of the Minister of Environmental Protection. Title to the beds and shores of all rivers, streams, watercourses, lakes and other bodies of water is declared to be vested in the Crown in right of Alberta and under the administration of the Minister of Environmental Protection, unless otherwise specified.

Reclamation: All practical and reasonable methods of designing and conducting an activity to ensure the return of equivalent land capability. Land capability means the ability of the land to support a given land use regardless of future management inputs. It refers to an evaluation or rating of the kind and degree of limitations on land use in terms of physical, chemical and biological characteristics such as topography, drainage, hydrology, soils and vegetation. The return of equivalent land capability means that the ability to support various land uses is similar to that which existed before the activity, but that the ability to support individual land uses will not necessarily be identical after reclamation.

Recreation:

Extensive recreation refers to the recreational use of trails, natural lakes, rivers, streams and generally undeveloped or minimally developed areas. The term includes such activities as off-highway vehicle use, random camping, hiking, backpacking, hunting, fishing, snowmobiling, horseback riding and cross-country skiing.

Intensive recreation refers to high-density recreational use such as developed staging areas and camp and picnic grounds, and other sites or areas requiring continuous recreational management and services to maintain recreational opportunities.

Referral System: The Alberta government has established formal mechanisms for the internal review of land use applications originating within itself and the private sector. Government management agencies that are concerned or affected by provisions of an application participate in the review. Each management agency, subsequent to the review, files its recommendation for the approval or rejection of the application. These positions are coordinated by a lead agency (e.g., "one window" approach), which, in turn, provides the proponent with a comprehensive decision.

Reservation System: An administrative system to record, in the department's official land records, a special interest any government agency has in the management of specified parcels of public land. Land reservations formally recognize that interest without granting disposition. Reservations are sometimes called notations. They identify and record areas that the department agrees are required for conservation, development or management. Reservations also provide for specified management priority over a parcel of land by a designated agency. Reservations may protect land for soils and water conservation, prevent certain uses, or reserve land for certain purposes, such as wildlife habitat, timber or recreation.

Residential Subdivisions: All activities and infrastructure associated with permanent housing subdivisions for residents.

Salvage Cutting: A cutting to remove dead, downed and injured trees before the timber becomes unmerchantable.

Secondary Industry: Industrial uses that are clearly and directly related to and necessary for the operations of a resource-based industry including industrial activities which are not directly involved in the extraction or processing of natural resources. Such uses include warehousing, storage, manufacturing and equipment repair.

Surface Materials: Defined as clay, marl, sand, gravel, silica sand, topsoil and peat as defined in the Public Lands Act, Surface Material Regulations

Sustained Yield Timber Management: The balancing of timber growth and harvesting production to ensure continued forest productivity at a given level of management without impairing the productivity of the land.

Tourism: The action and activities of people taking trips to places outside their home communities for any purpose except daily commuting to and from work, and excluding trips for the purpose of business.

Traditional Use: The continual use of an area over a long period of time by Aboriginal people for gathering, hunting and spiritual use.

Trapping: Sustained yield harvest of furbearing animals for the commercial production of fur.

Unimproved Range: Rangelands that have had no or minimal modifications to enhance range productivity, or which have no or minimal capacity for enhancement.

Wetlands: Lands that are seasonally or permanently covered by shallow water as well as lands where the water table is close to or near the surface.

Wildfire: An unplanned or unwanted natural or man-caused fire.

APPENDICES

Appendix 1. Projected Population of Fort McMurray to 2001

Options	1986	1991	1996	2001
	(Actual)	Projected		
A	34949	35712	35573	35162
B	---	37648	42024	42027
C	---	---	---	44199

Option A - Without a Project" assumes natural growth, using a cohort survival model, without migration to maintain a constant population in the 15-64 age group.

Option B - "Syncrude Expansion" assumes 95 percent of operating/pre-operating work force, 95 percent of the Syncrude construction-term employees and 20 percent of the site construction force will reside in Fort McMurray. It is based on an indirect employment multiplier of 0.5 in early years growing to 1.0 in later years for each direct job created. Assumes 2.246 persons per employed adult (5 percent unemployment rate); natural growth estimated using a cohort survival model.

Source: Prepared by Nichols Applied Management for the Environmental Impact Assessment for the Syncrude Canada Ltd. Mildred Lake Project.

Option C - OSLO (Other Six Leases Operation):

The 2001 population projection was calculated by adding the average of OSLO's high (10 800) and low (7700) Population increase estimates for 1998 to the actual 1986 base population. These increases were based on an estimated permanent workforce of 2000 employees. Population figures for 1991 and 1996 based on the construction workforce were unavailable.

Source: The OSLO Project, February 1990.

Appendix 2. Legislation and Associated Direction

Numerous government directives must be considered when developing an integrated resource plan. The most significant directions for this plan are discussed below.

Green Area

In 1989, public land in Alberta was reclassified (Ministerial Order 15/89) into the White Area (settlement lands) and the Green Area (predominantly forested lands).

The Green Area, originally established in 1948 by Alberta Order in Council 213/48, consists basically of the unsettled forest lands and covers 53 percent of the total area of the province of Alberta. Public land in the Green Area is managed primarily for forest production, watershed protection, fish and wildlife, recreation and other uses. Permanent settlement, except on legally subdivided lands, as well as agricultural uses other than grazing, have been excluded (Alberta Public Lands [Alberta 1981a]). This planning area does not currently contain any public land under the White Area classification.

Municipal Government Act

The Municipal Government Act (1995) provides for the planning and regulation of land uses and the pattern of settlement in Alberta. Most private development, whether private or public land, falls under the jurisdiction of the Act and any statutory plans adopted pursuant to it (e.g., Municipal Development Plan, Area Structure Plan). The Crown is not bound by the Municipal Government Act, but occupants of public land, other than the Crown, are. Accordingly, permits for private developments falling within the scope of the Act must be issued by the appropriate local authority. The plans in the planning area currently adopted pursuant to this Act or the preceding planning legislation (the Planning Act) are the Fort McMurray General Municipal Plan, Gregoire Lake, Anzac and Saprae Creek Area Structure plans.

Improvement District No.18 - Land Use Order No. 2

The Improvement District No. 18 Land Use Order No.2, approved in 1984 by the Minister of Municipal Affairs, is intended to regulate and control the use and development of land and buildings to achieve the orderly and economic development of land within the portion of the Municipality of Wood Buffalo which was formerly Improvement District No. 18-North. The order will eventually be replaced by a land-use bylaw covering the entire Municipality of Wood Buffalo.

Mines and Mineral Act

The Mines and Minerals Act applies to all mines, minerals and related resources vested in, or belonging to, the Crown in right of Alberta. Under authority of the Act, the administration, exploration and development of the provinces mineral resources are regulated to encourage their orderly development by industry and to maximize benefits to the province and Albertans. Regulations and policies are designed to stimulate mineral development, providing revenue to the developer, and taxes and royalties to the province. Except for the Exploration Regulation administered by the Department of Environmental Protection, the Mines and Minerals Act is administered by the Department of Energy.

Fish and Wildlife Policy for Alberta

The Fish and Wildlife Policy for Alberta was approved by Cabinet and released in October 1982. This policy provides general direction regarding outdoor recreation, wildlife resources, fisheries resources and regulatory aspects of fish and wildlife use. The Fish and Wildlife Policy calls for preparation of comprehensive 10-year fish and wildlife resource management plans. Meeting the objectives stated in this plan will achieve a portion of the overall fish and wildlife projected demand targets identified in the Status of Fish and Wildlife Resource in Alberta (1984).

Wilderness Areas, Ecological Reserves and Natural Areas Act

The Wilderness Areas, Ecological Reserves and Natural Areas Act (1984) consolidated the policy context for these three separate programs under one Act.

Ecological reserves are to be designated to protect representative landscapes of the province. This Act provides the public with the opportunity to submit recommendations regarding designation of wilderness areas and ecological reserves.

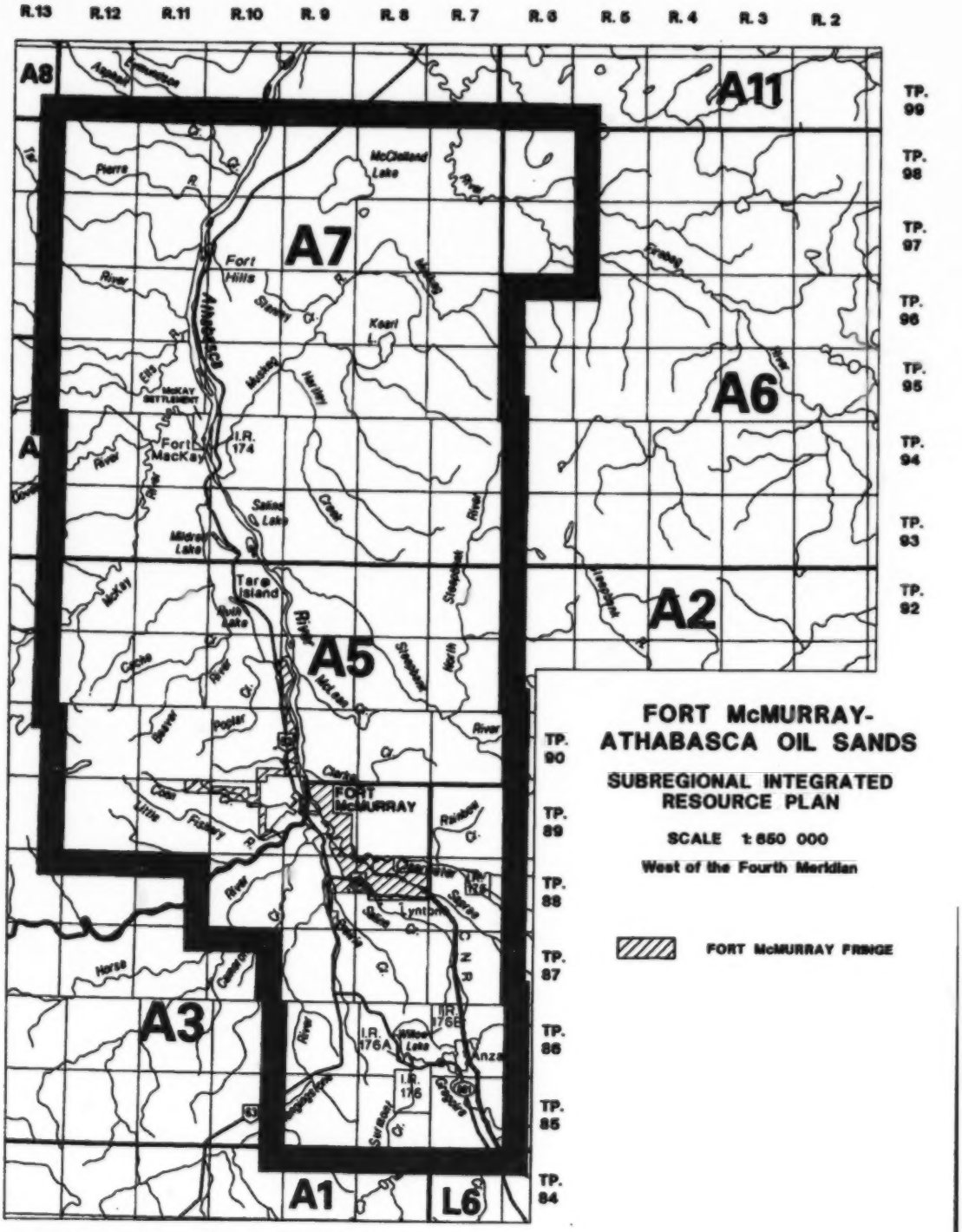
Natural Areas, which are scattered throughout the province, were previously established under the Public Lands Act or were simply under reservation. These areas have a broader set of acceptable uses than ecological reserves or wilderness areas, including recreation, education and conservation uses.

Environmental Protection and Enhancement Act

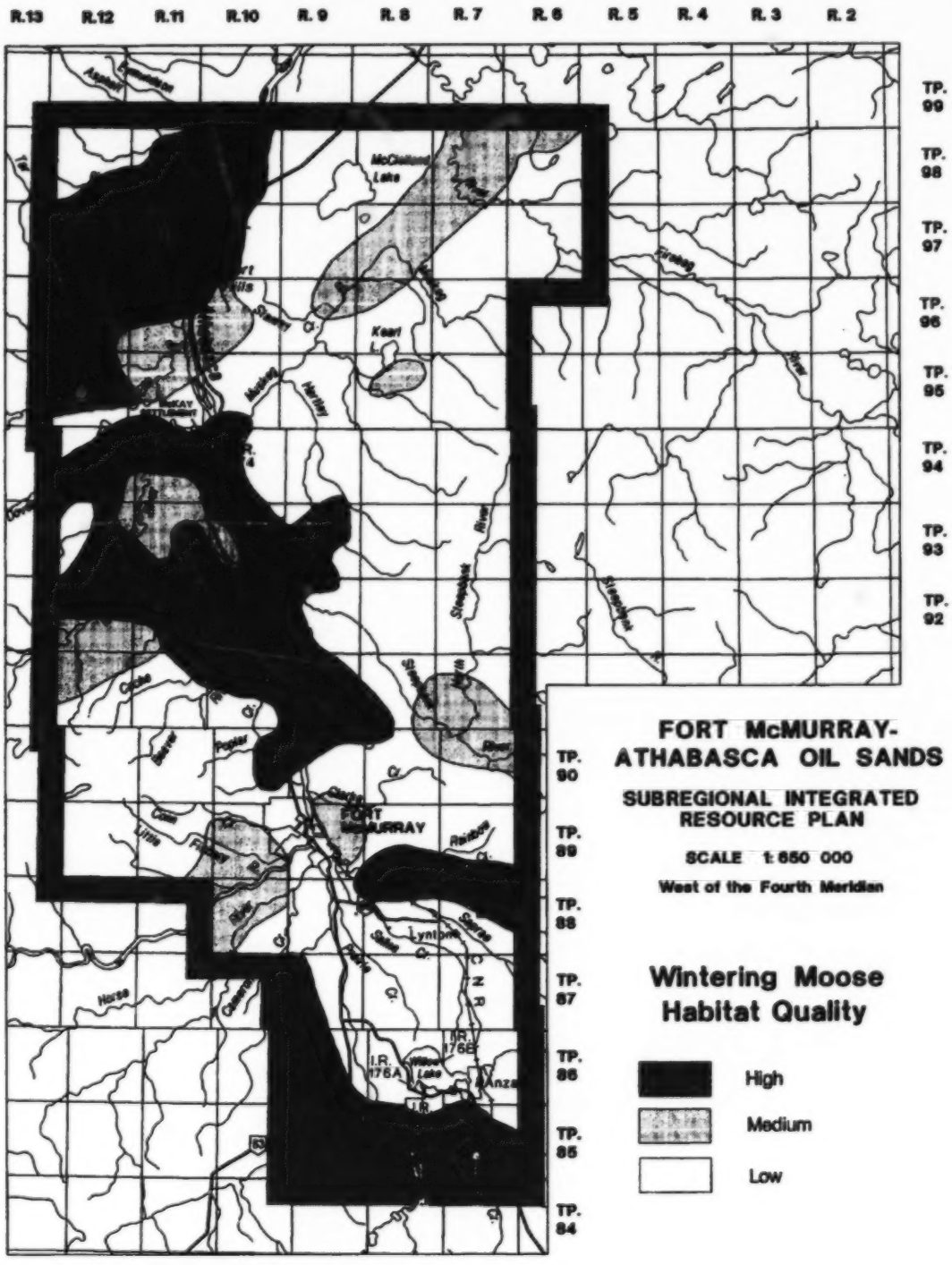
The Environmental Protection and Enhancement Act (1994) consolidated eight previous pieces of legislation under one Act.

The purpose of the Act is to support and promote the protection, enhancement and wise use of the environment and creates a framework in a single act that takes an integrated approach to protection of air, land and water. One of the act's cornerstones is the guarantee of public participation in decisions affecting the environment. This public involvement includes increased access to information, participation in the Environmental Assessment and Approval Processes and the right, when directly affected, to appeal certain decisions.

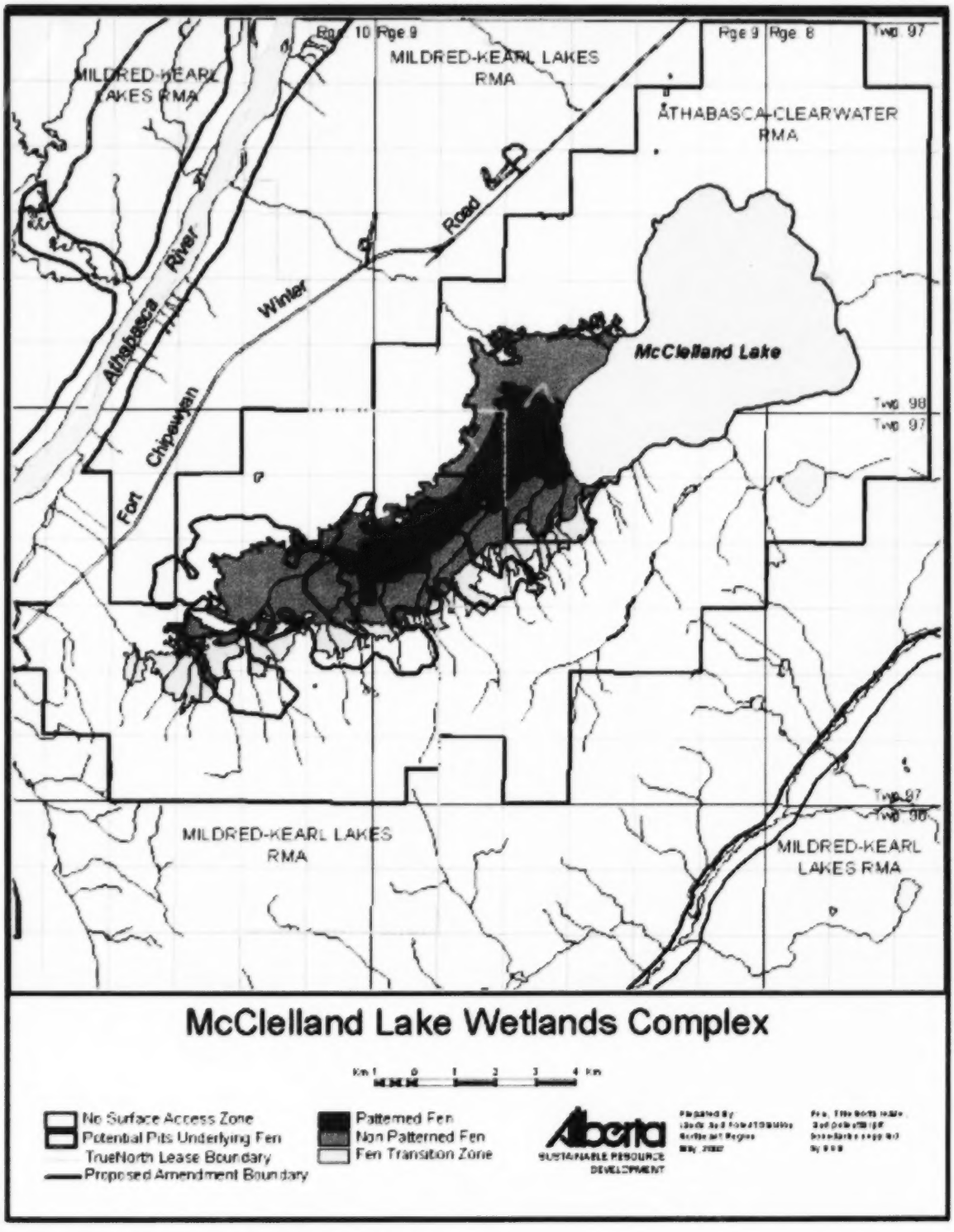
Under the new legislation, those who operate or propose developments will be subject to firm but fair requirements that clearly spell out their environmental responsibilities. The Act establishes a legislated process for environmental assessments. This will ensure that potential environmental impacts are identified early in the planning process. At the same time, project proponents will benefit from an integrated one-window approval process.



Appendix 3 Forest Management Units



Appendix 4 - Wintering Moose Habitat Quality



Appendix 5 - McClelland Lake Wetlands Complex